

# Before Use

Gap Checker

ISA3-#L



Thank you for purchasing an SMC ISA3-#L series Gap Checker. 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 the operation manual about this product and control unit, please refer to the SMC website (URL <http://www.smcworld.com>) or contact SMC directly.

## Safety Instructions

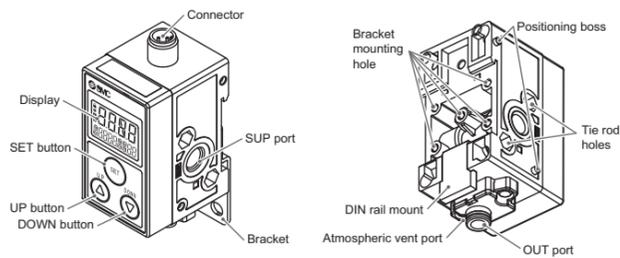
These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of "Caution", "Warning" or "Danger". They are all important notes for safety and must be followed in addition to International standards (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.

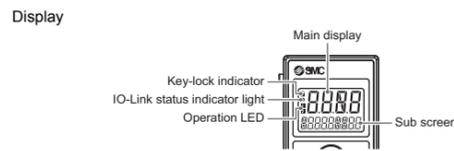
## Operator

- ◆ The 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 the operation manual carefully before assembling, operating or providing maintenance to the product.

## Summary of Product parts



Element	Description
Display	See below.
UP button (▲ button)	Selects the mode and the display shown on the Sub display, or increases the switch point.
SET button (● button)	Press this button to change the mode and to set the switch point.
DOWN button (▼ button)	Selects the mode and the display shown on the Sub display, or decreases the switch point.
Connector	Electrical connection.
SUP port (Supply port)	Port to supply pressure.
Bracket mounting hole	Used to attach the bracket to the product.
Tie rod holes	Used to connect additional products.
OUT port (Detection port)	Port to be connected to the detection nozzle.
Atmospheric vent port	Port to vent exhaust air to the atmosphere.
DIN rail mount	Used to mount the product on a DIN rail.



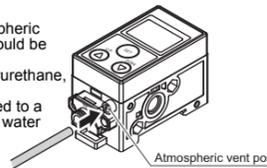
Element	Description
Main display	ON/OFF, display value during setting and error code are displayed. (2 colour display)
Operation LED	Indicates the switch output status. Turns ON (orange) when the switch output is ON.
Sub screen	Level meter, display value, switch point, pressure etc. are displayed.
Key-lock indicator	Turns ON when keys are locked.
IO-Link status indicator light	LED is ON when OUT1 is used in IO-Link mode. (LED is OFF in SIO mode)

## Mounting and Installation

### ■Piping

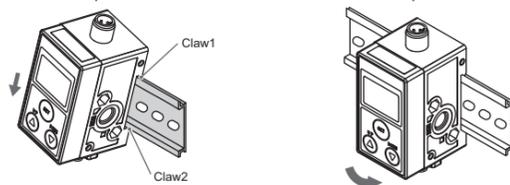
- **SUP port (supply port) and OUT port (detection port)**
  - Use the correct tightening torque. (Appropriate tightening torque (Rc1/8 · G1/8): 7 to 9 Nm)
  - \*: When tightening, do not hold the product body with a spanner.
  - Be careful not to damage the positioning boss.
  - For ø6 one-touch fitting, use tube with O.D. 6 mm, and I.D. 4 mm.
  - For ø4 one-touch fitting, use tube with O.D. 4 mm, and I.D. 2.5 mm.

- **Atmospheric vent port**
  - Connect tubing (sold separately) to the atmospheric vent port if there is a possibility that the port could be blocked by water or dust.
  - Recommended tube is TU0425 (material: polyurethane, O.D. ø4, I.D. ø2.5) made by SMC.
  - The other end of the air tubing should be routed to a safe place to prevent it from being exposed to water or dust.
  - Ensure the tubing has no sharp bends.

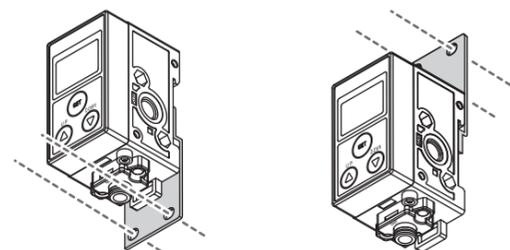


### ■Installation

- \*: Connect piping before mounting to the DIN rail or bracket.
- **DIN rail**
  - Hook the claw part 1 to the DIN rail.
  - Push the claw part 2 down until it clicks.

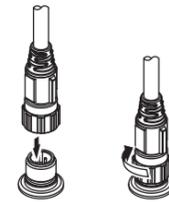


- **Bracket**
  - Mount the bracket to the product using the mounting screws (3 pcs.).
  - The tightening torque of the mounting screw must be 0.45 Nm ±10%.
  - When the product is mounted using the bracket, fix with M5 screws (2 pcs.) or equivalent.
  - Bracket thickness is approx. 1.6 mm.
  - Refer to the SMC website (URL <http://www.smcworld.com>) for mounting hole dimensions.



## ■Wiring

- **Mounting and removal of connector**
  - Align the body connector key and the cable connector key groove to insert vertically.
  - Turn the knurled part of the cable sideconnector clockwise.
  - Connection is complete when the knurled part is fully tightened.
  - Check that the connection is not loose.



○ Connector pin No. (Body side)			○ Connector pin No. (Cable side)			
Connector pin No.	Description	Connector pin No.	Description	Cable colour		
1	DC(+)	1	DC(+)	Brown		
2	DO (OUT2)	2	DO (OUT2)	White		
3	DC (-)	3	DC (-)	Blue		
4	C/Q (OUT1)	4	C/Q (OUT1)	Black		

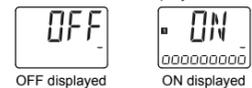
## Switch Point Setting

Power is supplied

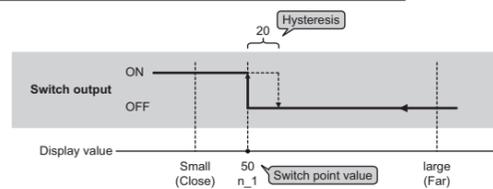
The identification code of the product is displayed.

### Measurement mode

Measurement mode starts automatically when supply pressure is between 80 and 220 kPa. Switch status ON or OFF will be displayed on the main screen.



Example: Switch output (For hysteresis mode and reverse output)



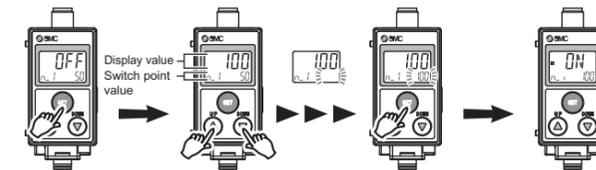
The switch output turns ON when the display value is less than switch point. (Solid line in the chart)  
The switch output turns OFF when the display value is greater than the switch point added to the hysteresis value. (Dashed line in the chart)

### ■Preparation before setting

- (1) Supply pressure to the product.
- (2) Place the workpiece on the detection nozzle.

### ■Operation

- (1) Set the items on the sub display (set value or hysteresis) with the UP or DOWN button. Press the SET button while in measurement mode, the display value will be displayed in the main screen and the switch point in the sub screen.
- (2) Press the UP or DOWN buttons to adjust the switch point value.
- \*: Pressing the UP and DOWN buttons simultaneously for a minimum of 1 second, then releasing the buttons when the displayed switch point value disappears, will make the switch point the same as the current display value. (Snap shot function)
- (3) Press the SET button to complete the switch point setting. The product will return to measurement mode.

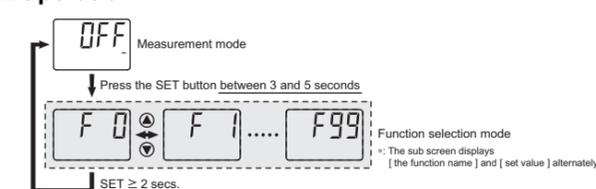


## Function setting

To change functions, use Function selection mode.

\*: Refer to the operation manual from SMC website (URL <http://www.smcworld.com>) for information about Function selection mode.

### ■Operation

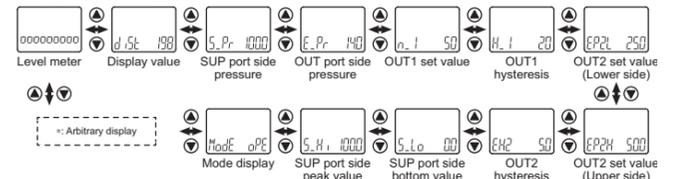


## ■Table of default settings

Function number	Function name	Label	Default setting
F 0	Unit selection	Unit	[kPa]
	Switch output specification	NorP	[PnP]
F 1	Output item	oU11	[diSt] Gap distance setting
	Output mode	ModE	[HYS] Hysteresis mode
	Reversed output	1ot	[1_n] Reversed output
	Switch point	n_1	ISA3-F: [20], ISA3-G: [50], ISA3-H: [50]
	Hysteresis	H_1	ISA3-F: [3], ISA3-G: [20], ISA3-H: [20]
	Display colour	CoL	[1SoG] Green when ON, Orange when OFF (Linked to OUT1)
F 2	Output item	oU2	[E_Pr] OUT port side pressure detection
	Output mode	ModE	[Wind] Window comparator mode
	Reversed output	2ot	[2_P] Normal output
	Pressure setting	EP2L	[25.0] kPa
	Hysteresis	EH2	[5.0] kPa
	Response time	EdH2	[1.00] s
		EdL2	[1.00] s
	Display colour	CoL	[1SoG] Green when ON, Orange when OFF (Linked to OUT1)
F 6	Display value compensation	FSCd	[0.0] Compensated value: 0.0
F10	Sub screen	SUB	[Std] Standard
F14	Zero cut-off setting	Cut	ISA3-F: [0.0]%, ISA3-G: [6.0]%, ISA3-H: [10.0]%
F80	Display mode setting	diSP	[on] Normal display mode
F81	Security code	Pin	[oFF] OFF
F90	Setting of all functions	ALL	[oFF] OFF
F95	Calibration	CAL	[oFF] Not calibrated
F98	Forced output	IESt	[n] Not forced output
F99	Reset to default settings	ini	[oFF] Reset OFF

### ■Display of sub screen

In measurement mode, the display of the sub screen can be changed by pressing the UP or DOWN buttons.



\*: An arbitrary display mode can be set for the sub screen by setting the [F10] sub display. If the sub display is changed during the arbitrary display setting, the display will return to the arbitrary display after 30 seconds. (The default setting does not include the arbitrary display).

## 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.

## Troubleshooting

### ■Error indication

Main display	Name	Description	Measures
---	Supply pressure error	Displayed when supply pressure is not in the range 80 kPa to 220 kPa. Measurement is not possible.	Supply rated pressure. (100 kPa to 200 kPa)
---	Display value is outside the displayable range (switch point setting mode)	The workpiece is outside the displayable range.	Move the workpiece closer to the detection nozzle.
Er 1	OUT1 over current error	The switch output (OUT1) load current has exceeded 80 mA.	Turn the power off and remove the cause of the over current. Then turn the power on again.
Er 2	OUT2 over current error	The switch output (OUT2) load current has exceeded 80 mA.	Turn the power off and remove the cause of the over current. Then turn the power on again.
Er 3	Zero clear error	Zero clear was performed in non-atmospheric pressure. (Pressure outside of ±14 kPa was supplied at factory default settings.)	Perform zero clear at atmospheric pressure.
Er 30	Pressure adjustment error during calibration	Fine adjustment of the pressure display at the OUT port was not performed correctly during calibration. (Pressure difference between SUP port and OUT port is greater than ±2% F.S.)	Keep the SUP port pressure and OUT port pressure the same and perform fine adjustment of the OUT port pressure display value.
Er 0			
Er 4			
?	System error	An internal data error has occurred.	Turn the power off and turn it on again.
Er 9			
Er 40			
Er 15	Version does not match	IO-Link Master and product version are not matched. Mismatch because master version is 1.0.	Align the master IO-Link version to the device.
Main display	Name	Description	Measures
---	Supply pressure error (When pressure value is displayed in the sub screen)	Pressure exceeding 220 kPa is supplied. Vacuum pressure (-22 kPa or less) is supplied.	Keep the supply pressure within the displayable range of -22 kPa to 220 kPa.

## Specifications / Dimensions

Refer to the product catalogue or operation manual from SMC website (URL <http://www.smcworld.com>) for more information about the product specifications and dimensions.

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

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Note: Specifications are subject to change without prior notice and any obligation on the part of the manufacturer.  
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