

# Before Use

## Gap Checker

### ISA3



Thank you for purchasing an SMC ISA3 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.

## Safety Instructions

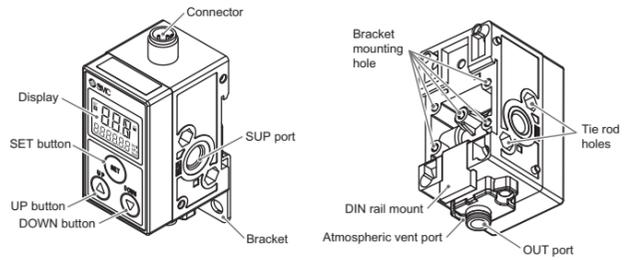
### Warning

- 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, explosive or corrosive gas. 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

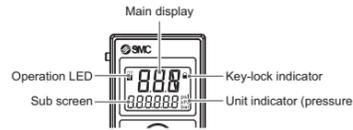
- Do not touch the terminals and connectors while the power is on. Otherwise electric shock, malfunction or damage to the product can result.
- After maintenance is complete, perform appropriate functional inspections and leak tests. Stop operation if the equipment does not function properly or there 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.

## 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.

### Display



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.
Unit indicator (pressure)	When pressure is displayed on the sub screen, this indicates the pressure unit currently selected.

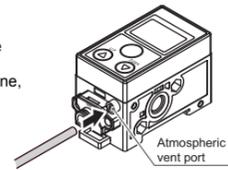
## Mounting and Installation

### 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)
  - 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

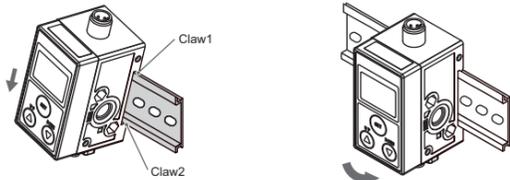
- Connect tubing (sold separately) to the atmospheric vent port if there is a possibility that the port could be blocked by water or dust.
- Recommended tube is TU0425 (material: polyurethane, O.D. ø4, I.D. ø2.5) made by SMC.
- The other end of the air tubing should be routed to a safe place to prevent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



### Installation

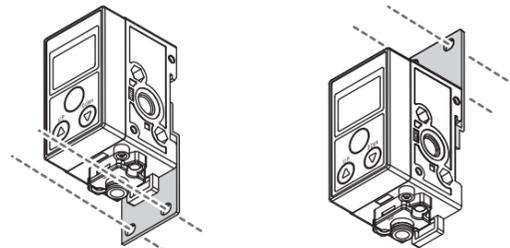
#### DIN rail

- Hook the claw part 1 to the DIN rail.
- Push the claw part 2 down until it clicks.



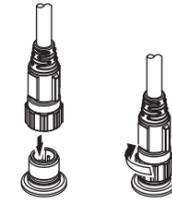
#### Bracket

- 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.	Description
1	DC(+)
2	1 output: N.C. 2 outputs: OUT2
3	DC(-)
4	OUT1

### Connector pin No. (Cable side)

Connector pin No.	Description	Cable colour
1	DC(+)	Brown
2	1 output: N.C. 2 outputs: OUT2	White
3	DC(-)	Blue
4	OUT1	Black

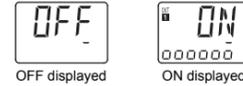
## Switch Point Setting

Power is supplied

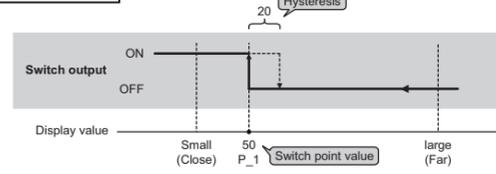
The identification code of the product is displayed.

### 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. Level meter will be displayed on the sub screen.



### Example: Switch output



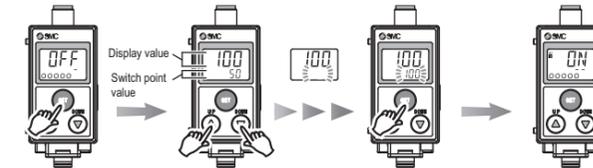
The switch output turns ON when the display value is less than switch point. (Solid line in the chart)  
The switch output turns OFF when the display value is greater than the switch point added to the hysteresis value. (Dashed line in the chart)

## Preparation before setting

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

## Operation

- (1) Press the ⏏ 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 ▲ or ▼ buttons to adjust the switch point value.
  - Pressing the ▲ and ▼ 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 ⏏ button to complete the switch point setting. The product will return to measurement mode.

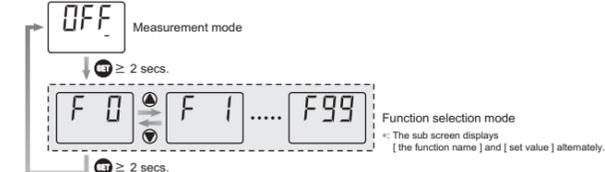


## Function setting

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	Default setting
F 0	Unit selection *1	[ PA ] kPa
F 1	Switch point	ISA3-F: [ 20 ], ISA3-G: [ 50 ], ISA3-H: [ 50 ]
	Hysteresis	ISA3-F: [ 3 ], ISA3-G: [ 20 ], ISA3-H: [ 20 ]
	Display colour	[ SoG ] Green when ON, Orange when OFF
F 2 *2	Output mode	out2 : [ Ewin ] OUT port side pressure detection window comparator mode
	Reversed output	2of : [ 2_P ] Normal output
	Pressure setting	EPL : [ 25 ] kPa
	Hysteresis	EPH : [ 50 ] kPa
F 6	Response time	rES : [ 1000 ]
	Display value compensation	[ 0.0 ] Compensated value: 0.0
F10	Sub screen	[LEvEL] Level meter
F80	Power saving mode	[ ON ] Normal operation
F81	Security code	[ OFF ] OFF
F90	Setting of all functions	[ SoF ] OFF
F98	Forced output	[normAL] Not forced output
F99	Reset to default settings	[ OFF ] Reset OFF

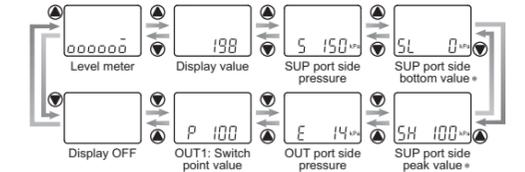
\*1: This setting is only available for models with the unit selection function.  
\*2: When 2 outputs type is selected.

## [F99]Reset to default settings

- The product can be returned to its factory default settings.
- (1) Press the ⏏ button when [F99] is displayed. [ini] is displayed on the main screen, [oFF] on the sub screen.
  - (2) Press the ▲ or ▼ button to display [ on ].
  - (3) Press and hold both the ▲ and ▼ buttons for 5 seconds or longer. [F99] will be displayed (Complete the reset to default settings).
  - (4) Press the ⏏ button for 2 seconds or longer to return to measurement mode.

## Display of sub screen

In measurement mode, the display of the sub screen can be temporarily changed by pressing the ▲ or ▼ buttons. 30 seconds after changing, the display will automatically return to the screen set in [F10] of Function selection mode.



•: Display for 2 outputs type only.

## Key-Lock

- (1) In measurement mode press the ⏏ button for 5 seconds or longer, [UnLoc] will be displayed on the sub screen.
- (2) Press the ▲ or ▼ button to display [LoC].
- (3) Key-Lock is confirmed and the product returned to measurement mode by pressing the ⏏ button.

## 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.
Er1	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.
Er2	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.
Er3	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.
Er0	System error	An internal data error has occurred.	Turn the power off and turn it on again.
Er4			
?			
Er9			
HHH	Supply pressure error (When pressure value is displayed in the sub screen)	Pressure exceeding 220 kPa is supplied.	Keep the supply pressure within the displayable range of -22 kPa to 220 kPa.
LLL	Vacuum pressure (-22 kPa or less) is supplied.		

•: Display for 2 outputs type only.

## 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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