

# Before Use

## Digital Flow Switch

### PF3A701H/PF3A702H



Thank you for purchasing an SMC PF3A701H/PF3A702H Digital Flow Switch. 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 <https://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.

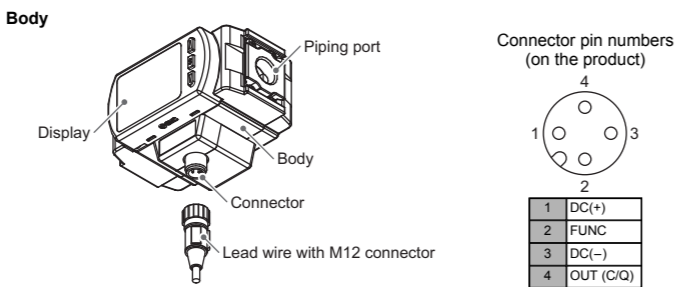
### Operator

- 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.

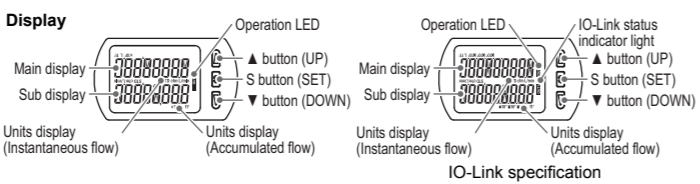
## Safety Instructions

- Warning**
  - Do not disassemble, modify (including changing the printed circuit board) or repair. An injury or failure can result.
  - Do not 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, explosion or corrosion can result. This product is not designed to be explosion proof.
  - Do not use the product for flammable fluid. Fire or explosion can result. Only air, N<sub>2</sub>, are applicable.
  - 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



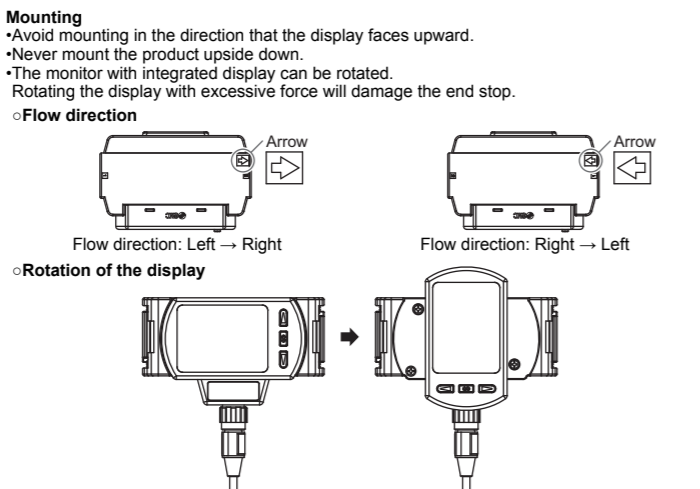
Element	Description
Display	See below.
Connector	M12 connector for electrical connections.
Lead wire with M12 connector	Lead wire for power supply and outputs.
Piping port	For piping connections.
Body	The body of the product.



Element	Description
Main display	Displays the instantaneous flow value and error codes. (2 colour display)
Operation LED	Indicates the output status of OUT. When the accumulated pulse output mode is selected, the output display will turn off. When the output is ON: Orange LED is ON.
Sub display	Displays the accumulated flow, set value, and peak/bottom value when in measurement mode.
▲ button (UP)	Selects the mode and the display shown on the Sub display, or increases the switch point.
S button (SET)	Press this button to change the mode and to set a value.
▼ button (DOWN)	Selects the mode and the display shown on the Sub display, or decreases the switch point.
Units display (Instantaneous flow)	Indicates the flow measurement units currently selected.
Units display (Accumulated flow)	Indicates the flow measurement units currently selected.
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

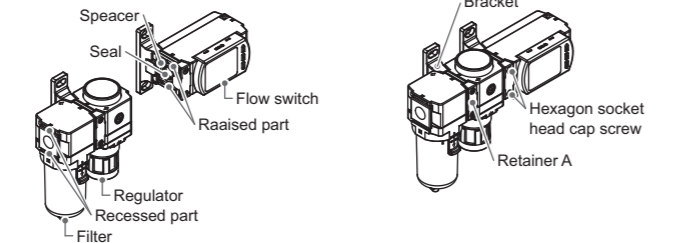
Refer to the product catalogue or SMC website (URL <https://www.smcworld.com>) for more detailed information.



### Piping

- Fit the raised part of the spacer to the recessed part (groove for the raised part) of the product.
- Tighten the retainer A with two hexagon socket head cap screws temporarily.
- Tighten the two hexagon socket head cap screws with a hexagonal wrench evenly. Refer to the control items shown below for the tightening torque for the screws.

Applicable model	Hexagonal wrench socket size	Tightening torque
PF3A701H	3	1.2±0.05 Nm
PF3A702H		



The following options are required for coupling with modular F, R, and L combinations. They are separately prepared by the user.

Digital flow switch	Air combination	Spacer	Spacer with bracket	Pipe adapter
PF3A701H	AC3#F-D	Y300-D	Y300T-D	E300-#03-D
PF3A702H	AC40#F-D	Y400-D	Y400T-D	E400-#04-D

\*: For more information about the options, refer to our website (URL <https://www.smcworld.com>).

**<Caution>**

- Do not apply torsion or bending moment other than the weight of the product itself.
- External piping needs to be supported separately as it may cause damage. If a moment applied to the equipment is unavoidable during operation, the moment should be lower than the maximum moment shown below. Non-flexible piping like steel tube is susceptible to excessive moment load or vibration. Insert flexible tubes to prevent this.

Models	PF3A701H	PF3A702H
Maximum moment (M): Nm	16	19.5

Max. moment (M) = Length (L) x Load (F)

### Wiring

#### Connection

- Connections should only be made with the power supply turned off.
- Use a separate route for the product wiring and any power or high voltage wiring. If wires and cables are routed together with power or high voltage cables, malfunction may result due to noise.
- If a commercially available switching power supply is used, be sure to ground the frame ground (FG) terminal. If the product is connected to the commercially available switching power supply, switching noise will be superimposed and the product specifications will not be satisfied. In that case, insert a noise filter such as a line noise filter/ ferrite between the switching power supplies or change the switching power supply to the series power supply.

#### Connecting/Disconnecting

- Align the lead wire connector with the connector key groove, and insert it straight in. Turn the knurled part clockwise.
- Connection is complete when the knurled part is fully lightened. Check that the connection is not loose.
- To remove the connector, loosen the knurled part and pull the connector straight out.

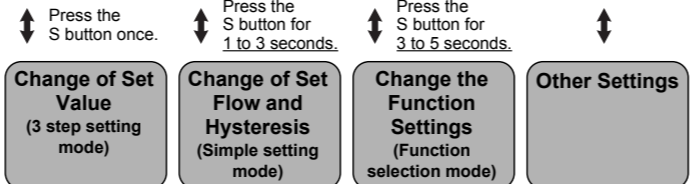
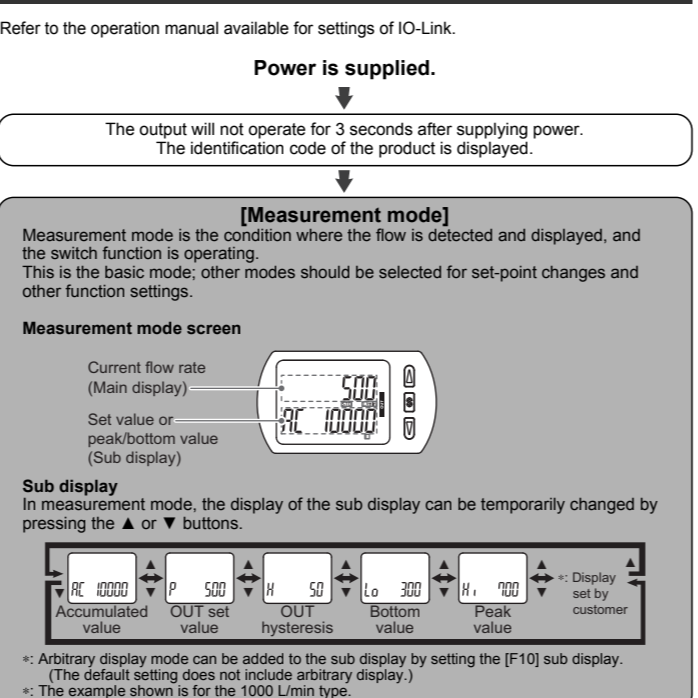
#### Connector pin numbers (lead wire)

Pin number	Wire colour	Description
1	Brown	DC(+)
2	White	FUNC
3	Blue	DC(-)
4	Black	OUT

#### Used as IO-Link device

Pin number	Wire colour	Description
1	Brown	DC(+)
2	White	N.C./Other
3	Blue	DC(-)
4	Black	C/Q

## Outline of Settings



\*: The outputs will continue to operate during setting.

\*: If a button operation is not performed for 30 seconds during the setting, the display will flash. (This is to prevent the setting from remaining incomplete if, for instance, an operator were to leave during setting.)

\*: 3 step setting mode, simple setting mode and function selection mode settings will reflect on each other.

## Change of Set Value

### 3 step setting mode

In the 3 step setting mode, the set value selected in the sub display and the hysteresis can be changed in just 3 steps.

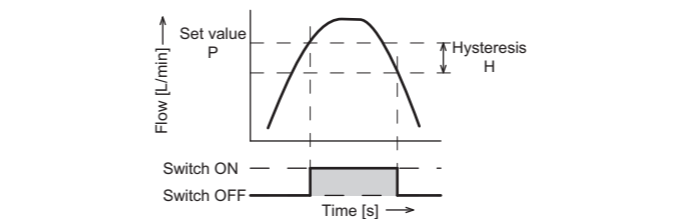
### Default settings

When shipped, the default setting is as follows.

When the flow exceeds the set value [P], the switch will be turned ON.

When the flow falls below the set value by the amount of hysteresis [H] or more, the switch will turn OFF.

If the operation shown in the diagram below is acceptable, then keep these settings. For more detailed settings, set each function in the function selection mode.



Item	PF3A701H	PF3A702H
[P] Set value of OUT	500 L/min	1000 L/min
[H] Hysteresis of OUT	50 L/min	100 L/min

### <Operation>

[Hysteresis mode]

In the 3 step setting mode, the set value (P or n) and hysteresis (H) can be changed. Set the items on the sub display (set value and hysteresis) using the ▲ or ▼ buttons. When changing the set value, follow the operation below. The hysteresis setting can be changed in the same way.

