Before Use	SMC.
Digital Flow Switch	
PF2M7##	<b>@ IO</b> -Link

Thank you for purchasing an SMC PF2M7## 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.

## Safetv 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 indicates a hazard with a low level of risk which, if A Caution: not avoided, could result in minor or moderate injury. Marning: WARNING indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury. DANGER indicates a hazard with a high level of risk which, DANGER INDICALES a Indicate a Indicate of the Indicate of the

### 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

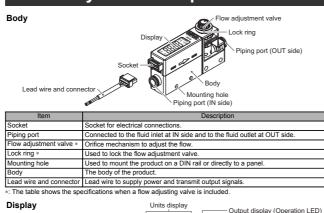
🛆 Warning			
Do not disassemble, modify (including changing the p An injury or failure can result.	rinted circuit board) or repair.		
■ Do not operate the product outside of the specification Do not use for flammable or harmful fluids. Fire, malfunction, or damage to the product can result. Verify the specifications before use.	15.		
Do not operate in an atmosphere containing flammable Fire or an explosion can result. This product is not designed to be explosion proof.	e, explosive or corrosive gas.		
■ Do not use the product for flammable fluid. A fire or explosion can result. Only dry air, N₂, CO₂ and Ar are applicable.			
■ Do not use the product in a place where static electric 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 med- Check the product regularly for proper operation Otherwise malfunction can result, causing an accident.	nanical system		
The following instructions must be followed during ma •Turn off the power supply •Stop the air supply, exhaust the residual pressure and ve maintenance work Otherwise an injury can result.			
🛆 Cau	ition		
Do not touch the terminals and connectors while the p Otherwise electric shock, malfunction or damage to the pro-			
■After maintenance is complete, perform appropriate fu Stop operation if the equipment does not function properly When leakage occurs from parts other than the piping, the Disconcert the acure unput and teap the fluid upply	or there is a leakage of fluid.		

Disconnect the power supply and stop the fluid supply Do not apply fluid under lea Safety cannot be assured in the case of unexpected malfunction.

### ■NOTE

- •The direct current power supply to be used should be UL approved as follows: Circuit (of Class 2) which is of maximum 30 Vrms (42.4 V peak), with UL1310 Class 2 power supply unit or UL1585 Class 2 transformer.
- •The product is a UL approved product only if it has a Ma mark on the body.

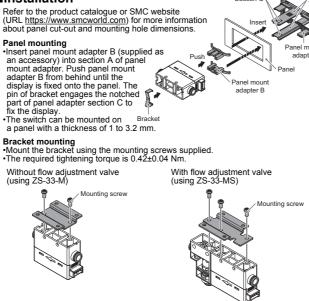
## Summary of Product parts



	Main display		
Item	Description		
UP button *	Selects the mode or increases the ON/OFF set value. Press this button to change to the peak display mode.		
DOWN button *	Selects the mode or decreases the ON/OFF set value. Press this button to change to the bottom display mode.		
Main display	Displays the flow value, setting mode, and error indication. Four display modes can be selected: display always in red or green, or display changing from green to red, or red to green, according to the output status (OUT1).		
SET button	Press this button to change to another mode and to set a value.		
Output display (Operation LED)	Displays the output status of OUT1 and OUT2. OUT1: LED is ON (Orange) when the output is ON. OUT1: LED is ON (orange) when the output is ON. When the accumulated pulse output mode is selected, the output display is OFF.		
Units display	Arbitrary units is ON based on the flow display setting (instantaneous or accumulated flow)		
IO-Link status indicator light	LED is ON when OUT1 is used in IO-Link mode. (LED is OFF in SIO mode)		
E: If the reversed display I	has been selected, the UP and DOWN button function will be reversed.		

# Mounting and Installation

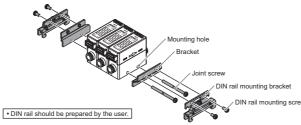
### Installation



Install the product (with bracket) using the M3 screws (4 pcs.).
Bracket thickness is approximately 1.2 mm.

### DIN rail mounting (using ZS-33-R#)

•Mount the DIN rail mounting arts using DIN rail mounting screws and joint screws supplied. •The required tightening torque of the DIN rail mounting screws and joint screws is 0 4+0 05 Nm



### ■Piping

•For one-touch fittings, insert the tube until it bottoms out, to ensure it cannot be pulled

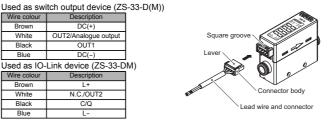
Insertion with excessive force can cause damage. -Insertion with excessive index can cause damage.
-For piping of the product, hold the piping with a wrench on the metal part of the product.
Holding other parts of the product with a wrench may damage the product.
-Ensure that there is no leakage after piping.
Use this product within the specified operating pressure and temperature ranges.
-Proof pressure is 1.0 MPa.

# ■Wiring

Wiring of connector ections should only be made with the power supply turned off Use separate routes for the product wiring and any power or high voltage wiring. Otherwise, malfunction may result due to noise.

Otherwise, malfunction may result due to noise. -Ensure that the FG terminal is connected to ground when using a commercially available switch-mode power supply. When a switch-mode power supply is connected to the product, switching noise will be superimposed and the product specification can no longer be met. This can be prevented by inserting a noise filter, such as a line noise filter and ferrite core, between the switch-mode power supply and the product, or by using a series power supply instead of a switch-mode power supply

Connecting/Disconnecting •When mounting the connector, insert it straight into the socket, holding the lever and connector body, and push the connector until the lever hooks into the housing, and locks. •When removing the connector, press down the lever to release the hook from the housing and pull the connector straight out.

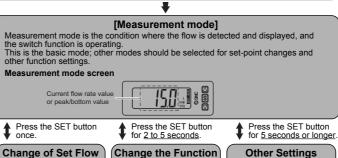


## **Outline of Settings**

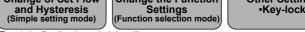
## Power is supplied.

₹ The product code is displayed for approximately 3 sec. after power is supplied.

Then, measurement mode will be displayed. moving on to the measurement mode, the switch operation will start. \* After n



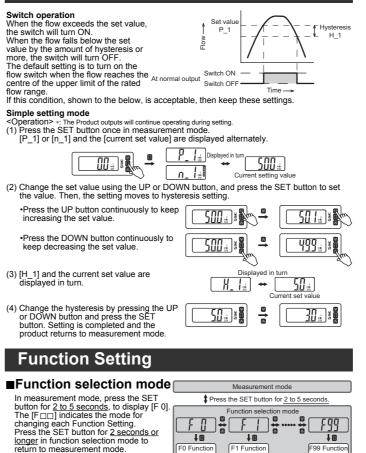
Change the Function



The outputs will continue to operate during setting.
 Simple setting mode and function selection mode settings are reflected each other.

## Flow Setting

Change of Set Flow



### ■Default setting

The default setting is as follows. If no problem is caused by this setting, keep these settings,

	Item	Default setting	
	[FLU] Switch the flow rate	[Air] Dry air, N <sub>2</sub>	
	[rEF] Setting the units criteria	[Std] Standard condition	
	[Unit] Measurement unit seitching *1	[ L1 L/min (L)	
[F U] ⇔ [FLU]	[norP] SW output PNP/NPN setting *4	[PnP] PNP output	
	[i o] SW/external input setting *4 *5	[oUt] SW output	
	[oUt1] Setting of OUT1	[HYS] Hysteresis mode	
	[1ot] OUT1 output configuration setting	[1_P] Normal output	
[F 1] ⇔ [oUt1]	[P_1] Set value	[] 50% of maximums rated flow PF2M701: 0.5 L/min, PF2M702: 1.0 L/min PF2M705: 2.5 L/min, PF2M710: 5 L/min PF2M715: 12.5 L/min, PF2M710: 25 L/min PF2M711: 50 L/min	
	[H_1] Hysteresis	[] 5% of maximums rated flow PF2M701: 0.05 L/min, PF2M702: 0.1 L/min PF2M705: 0.25 L/min, PF2M770: 0.5 L/min PF2M7125: 1.3 L/min, PF2M750: 2.5 L/min PF2M711: 5 L/min	
	[dt1] Delay time setting	[0.00] 0.00 second	
	[CoL] Display colour setting	[1SoG] ON: Green OFF: Red	
	[oUt2] Setting of OUT2 *2	[HYS] Hysteresis mode	
	[2ot] OUT2 output configuration setting *2	2 P Normal output	
	[201] 0012 output conliguration county 12	1 1 50% of maximums rated flow	
[F 2] ⇔ [oUt2]	[P_2] Set value *2	PF2M701: 0.5 L/min, PF2M702: 1.0 L/min PF2M705: 2.5 L/min, PF2M710: 5 L/min PF2M725: 12.5 L/min, PF2M750: 25 L/min PF2M711: 50 L/min	
	[H_2] Hysteresis *2	[] 5% of maximums rated flow PF2M701: 06 L/min, PF2M702: 0.1 L/min PF2M705: 0.25 L/min, PF2M710: 0.5 L/min PF2M725: 1.3 L/min, PF2M750: 2.5 L/min PF2M711: 5 L/min	
	[dt2] Delay time setting *2	[0.00] 0.00 second	
	[CoL] Display colour setting *2	[1SoG] ON: Green OFF: Red	
[F 3] ⇔ [FiL]	[FiL] Digital filter setting	[1.0] 1.0 second	
[F 4] ⇔ [PrS]	[PrS] Auto-preset function setting	IoFF1 Manual	
[F10] ⇔ [FL0]	[FLo] Display mode	[inS] nstantaneous flow	
[F11] ⇔ [drE]	[drE] Display resolution setting	[1000] 1000-split	
[F13] ⇔ [rEv]	[rEv] Set Reverse display	IoFF1 Not reverse	
	[CUt] Zero cut-off setting	10.01% of maximums rated flow PF2M701: 0.01 L/min, PF2M702: 0.02 L/min PF2M705: 0.05 L/min, PF2M710: 0.1 L/min PF2M715: 0.3 L/min, PF2M750: 0.5 L/min PF2M711: 1 L/min	
[F20] ⇔ [inP]	[inP] External input setting *5	[rAC] Accumulated value reset	
	[AoUt] Analogue output setting *3	<ul> <li>[1-5] 1 to 5 V Voltage output (when voltage is output)</li> <li>[] Analogue output is not selectable (for current type output)</li> </ul>	
F30] ⇔ [SAvE1	[SAvE] Accumulated flow value hold setting	[oFF] Not held	
[F80] ⇔ [diSP]	[diSP] Display OFF mode setting	[ on] Normal display	
[F81] ⇔ [Pin] [Pin] Security code		IoFF1 Unused	
[F90] ⇔ [ALL] [ALL] Setting of all functions		[oFF] Unused	
[F90] ⇔ [ALL]	IS in External input signal check +5	No setting due to input signal setting	
[F90] ⇔ [ALL] [F96] ⇔ [S_in]	[S_in] External input signal check *5	No setting due to input signal setting	
[F90] ⇔ [ALL] [F96] ⇔ [S_in] [F98] ⇔ [tESt]	[S_in] External input signal check +5 [tESt] Output checking	No setting due to input signal setting [ n] Normal output [oFF] Not recover	

Only available for models with switch outputs for both OUT1 and OUT2. This function is available for models with analogue output. Analogue free span function can be selected. This function is available in IO-Link compatible products. This function is available for models with external input.

## Other Settings

Snap shot function Key-lock function

Peak/bottom value indication Reset Zero-clear function

To set each of these functions, refer to the SMC website (URL <u>https://www.smcworld.com</u>) for more detailed information, or contact SMC.

## Maintenance

- Cuus a lus all a a fi a u

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.

## Troubleshooting

Error Name	Error displayed	Description	Measures	
Instantaneous flow error		Flow exceeding the upper limit of the set flow range is applied.	Reduce the flow.	
		Flow exceeding the lower limit of the set flow range is applied.	Ensure the flow is in the correct direction.	
OUT1 over current error	Er I	The load current applied to the switch output has exceeded the maximum value. (OUT1)	Turn the power off and remove the cause of the	
OUT2 over current error	[r ]	The load current applied to the switch output has exceeded the maximum value. (OUT2)	over current. Then turn the power on again.	
Zero clear error	[r]	During zero clear operation, pressure greater than ±5% F.S. is applied. (The mode is returned to measurement mode automatically 1 second later).	Retry the zero clear operation without applying fluid.	
System error	Er         Er         Y           Er         Er         Y           Er         Er         Y           Er         Er         Y           Er         Er         Y	An internal data error has occurred.	Turn the power off and turn it on again.	
Accumulated flow error *1	Accumulated flow displayed (flashing)	The accumulated flow has exceeded the accumulated flow range. (For accumulated increment)	Reset the accumulated flow. (Press the UP and	
	Accumulated flow displayed (flashing)	The accumulated flow has reached the set accumulated flow. (For accumulated decrement)	DOWN buttons simultaneously for <u>1 second or longer</u> )	
Version does not match	[Er 15]	Version of master and IO-Link does not match. Mismatch because master version is 1.0.	Align the master IO-Link version to the device.	

\*: If the error cannot be reset after the above measures are taken, or errors other than above are displayed, please contact SMC. Refer to the SMC website (URL https://www.smcworld.com) for more information about

## Specifications / Outline with Dimensions

Refer to the product catalogue or SMC website (URL <u>https://www.smcworld.com</u>) for more information about the product specifications and outline dimensions.

### SMC Corporation URL https://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. © 2019 SMC Corporation All Rights Reserved PF% \*-OMW00 PF \*\* \*\*-OMW0008-A