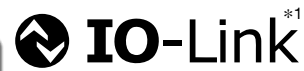


3-Color Display



Digital Flow Switch for Large Flow

IP65



*1 For the PF3A□□H-L

A wide range of flow measurement is possible
with 1 product.

Flow ratio^{*2} **100:1** *2 Max. rated flow value : Min. rated flow value

	Series	Output type	Rated flow range [L/min]	
			Display range [L/min]	
Body Ported Type	3-Color Display PF3A7□H(-L) Series p. 13, 15	Switch output Analog output IO-Link	30	3000
			0	4500
			3000 L type	
Modular Type	3-Color Display PF3A7□H(-L) Series p. 17, 19	Switch output Analog output IO-Link	60	6000
			0	9000
			6000 L type	
	4-Screen Display With pressure/ temperature sensor PF3A8□H-L Series p. 21	Switch output IO-Link	120	12000
			0	18000
			12000 L type	
			New 5	500
			0	750
			500 L type	
			10	1000
			0	1500
			1000 L type	
			20	2000
			0	3000
			2000 L type	
			New 40	4000
			0	6000
			4000 L type	
			New 80	8000
			0	12000
			8000 L type	

- New**
- 500 L/4000 L/8000 L types have been added to the modular type.
 - The display range has been expanded.
(1.5 times the rated flow range)

Modular type

500 L 1000 L 2000 L 4000 L 8000 L

Can be connected to the air combination p. 4



Body ported type

3000 L 6000 L 12000 L



PF3A□H(-L) Series



Added applicable air combination sizes (●: Model)

Flow range	Air combination model				
	AC20-D	AC30-D	AC40-D	AC50-D	AC60-D
500 L/min	●				
1000 L/min		○			
2000 L/min			○		
4000 L/min				●	●
8000 L/min				●	●

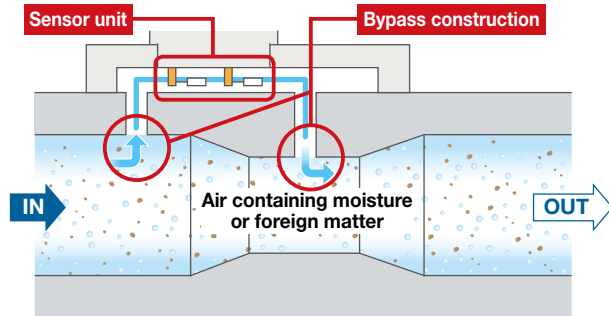
3-Screen Display Digital Flow Monitor

Allows for the monitoring
of remote lines p. 7



Improved resistance to moisture and foreign matter

The bypass construction reduces the moist air or foreign matter in contact with the sensor, reducing sensor accuracy deterioration and damage.



* The figure shows the PF3A703/6/12H(-L).

Through bore construction^{*1}

- Pressure loss:
75% reduction^{*2}
(20 kPa → 5 kPa)
- Maintenance-free fluid passage

*1 Excludes the modular type

*2 Compared with the existing model (PF2A7□H/ Large flow type)



New Can be used with carbon dioxide and argon, in addition to air and nitrogen

* It is possible to select the gas in settings.



* For the modular type, check the fluid in use with the AC-D connected component.

3-color/2-screen display

* 2-screen display: 2-row display of main screen and sub screen

Upper Main display: **Green** At set point

Upper Main display: **Red** At set point

Instantaneous flow rate **Green** **Red** (Upper Main display)



Set value **Orange** (Lower Sub display)

The lower/sub display can be changed by pressing the up/down buttons.

* Either "Input of line name" or "Display OFF" can be added via the function settings.



New Expanded the set point range/display range

It is possible to display/set a range of up to **150%** of the rated flow range.

* Existing model: 105%

* For a list of setting ranges for each series, refer to the "Flow Range" table on page 24.

Grease-free

Smallest settable increment

1 L/min * For the PF3A7/8R5H, PF3A7/801H

2 L/min * For the PF3A703H

* 5 L/min for the existing model (PF2A703H/Large flow type)

Display rotates 90° and can be reversed.

Clockwise
90° Easy operation,
improved visibility

The display can be rotated in increments of 90° according to the installation. The display can be reversed for easy operation.

* Excludes the PF3A7/8R5H, 7/804H, and 7/808H



Installation Example

Reversed display OFF



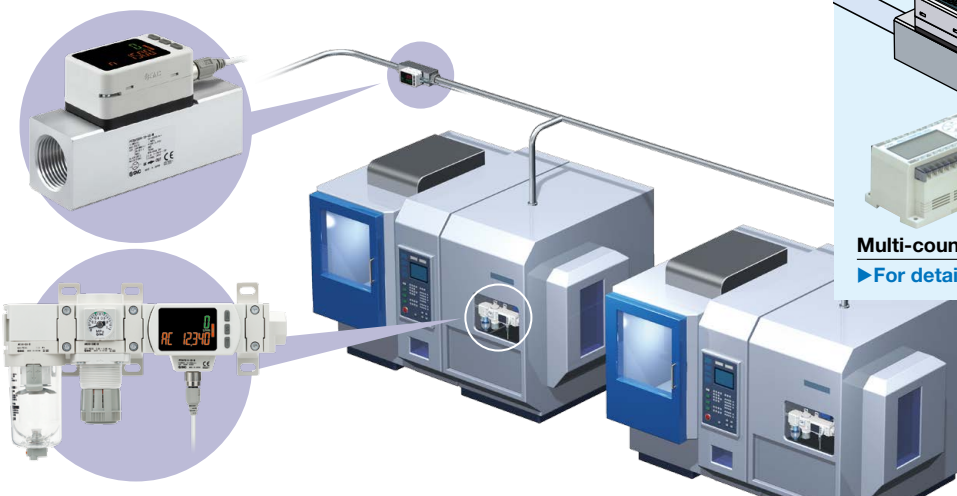
Reversed display ON (Can be set with the "Reversible display mode")



Select a digital flow switch to increase energy savings

Flow control is necessary for promoting energy saving in any application. Saving energy starts from numerical control of the flow consumption of equipment and lines and clarification of the purpose and effect.

- Digital display allows **visualization**.
- **3-color, 2-screen/4-screen display**, Improved visibility
- **Remote control of the consumption flow rate** is possible with accumulated pulse.

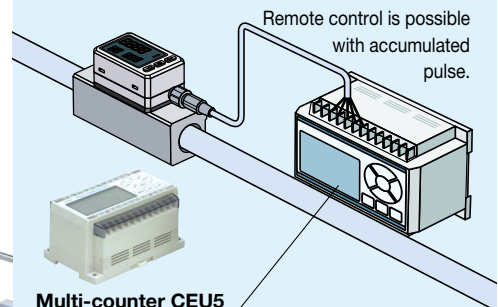


Energy Saving Program

For details, refer to the SMC website.



Flow control of equipment, main line, and branch line



Multi-counter CEU5

► For details, refer to the Web Catalog.

New Accumulated pulse conversion value: Select from **4 types** based on the flow range
Accumulated pulse width: Select a setting between **50 to 100 ms**

3-Color Display Modular Type Digital Flow Switch PF3A7R5H/701H/702H/704H/708H(-L) Series

pp. 17, 19

Can be connected to the air combination

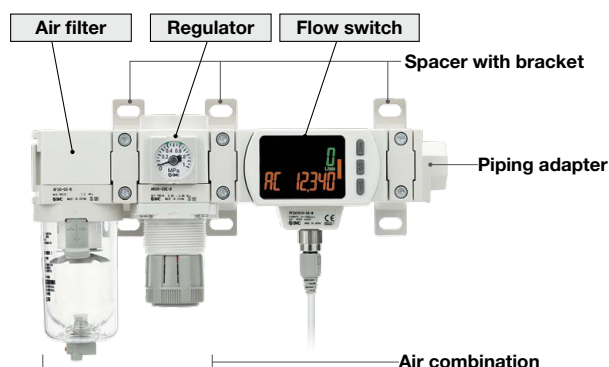
Series	AC20-D	AC30-D	AC40-D	AC50-D	AC60-D	Flow range
PF3A7R5H(-L)	●					500 L/min
PF3A701H(-L)		●				1000 L/min
PF3A702H(-L)			●			2000 L/min
PF3A704H(-L)				●	●	4000 L/min
PF3A708H(-L)				●	●	8000 L/min



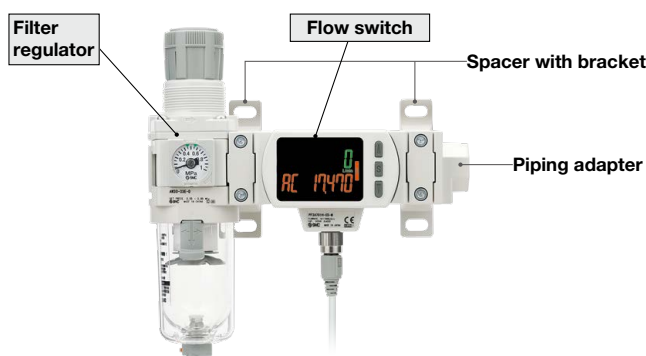
Air Combination Connection Examples

Products do not come assembled.
They should be ordered separately and assembled by the customer.

For the AC30B-D + PF3A701H



For the AW30-D + PF3A701H



Simple Specials System

Unit with F.R.L is available with the simple special ordering system.
The lead time is almost the same as the standard product.

Please contact your local sales representative for more details.

A right to left (-R)
flow direction is
also available.



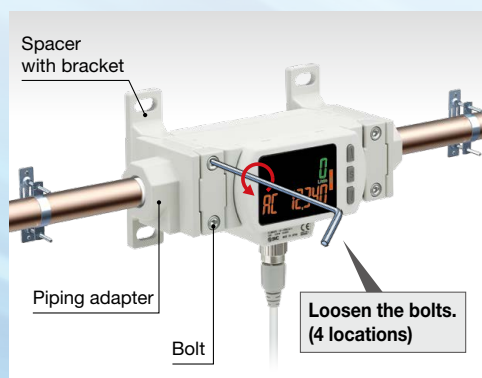
90° rotation

* Excludes the PF3A7/8R5H, 7/804H, and 7/808H



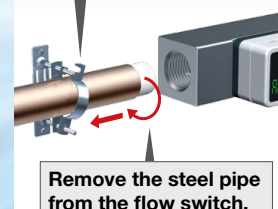
The flow switch can be installed/removed without removing the piping.

Reduced maintenance time for inspection, cleaning, replacement, etc.



When the PF3A703H is
used with steel pipes

Loosen the bracket-
retaining ring.



4-Screen Display Modular Type Digital Flow Switch with Pressure/Temperature Sensor

PF3A8R5H/801H/802H/804H/808H-L Series p. 21

Can be connected to the air combination

Series	AC20-D	AC30-D	AC40-D	AC50-D	AC60-D	Flow range	Pressure	Temperature
PF3A8R5H-L	●					500 L/min	1 MPa	50°C
PF3A801H-L		●				1000 L/min		
PF3A802H-L			●			2000 L/min		
PF3A804H-L				●	●	4000 L/min		
PF3A808H-L				●	●	8000 L/min		



3-color/4-screen display

Simultaneous measurement of the instantaneous flow rate, accumulated flow rate, pressure, and temperature

Pressure sensor

Rated pressure range: 0 to 1 MPa

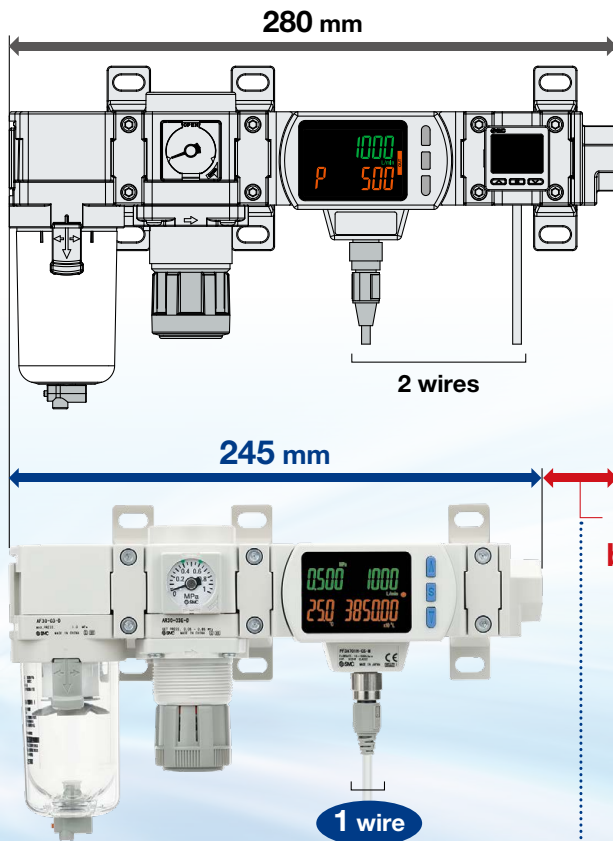
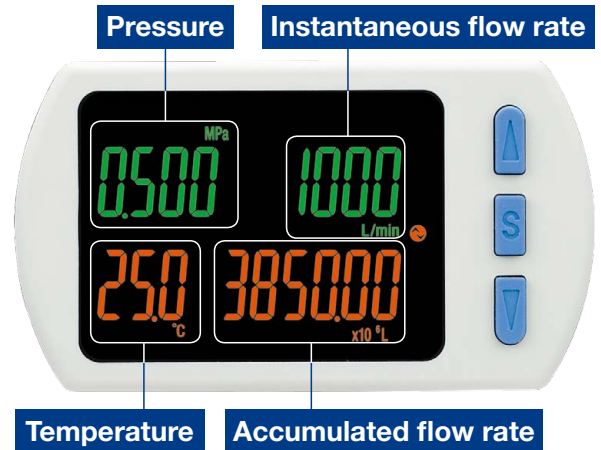
Temperature sensor

Rated temperature range: 0 to 50°C

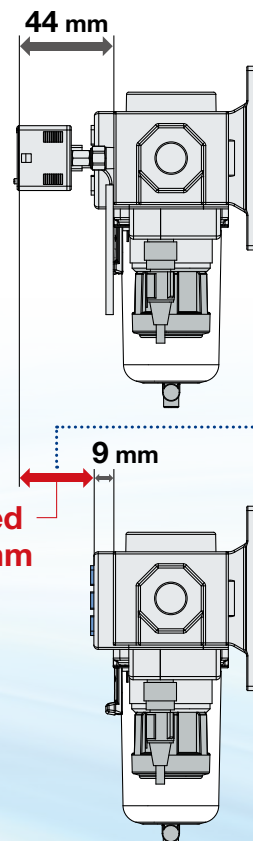
Space-saving design, Reduced labor

Both the flow rate and pressure can be measured with 1 product.

The installation of a digital pressure switch and a cross spacer is not necessary, thus reducing the face-to-face and depth dimensions. In addition, only 1 cable is required for wiring. This reduces the required installation space, piping, and wiring work.



**Reduced wiring labor
(2 wires → 1 wire)**



**Depth dimension
reduced by 35 mm**

**Face-to-face dimension
reduced by 35 mm**

Implement diagnostic bits in the process data.

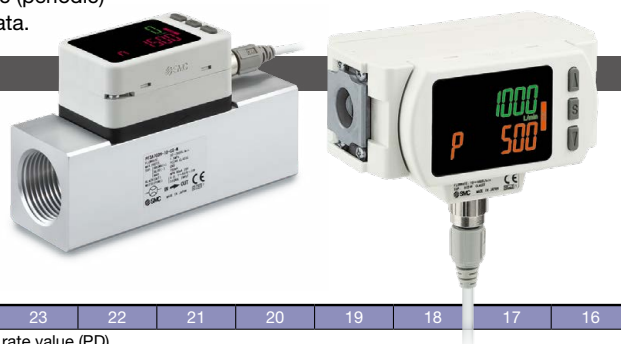
The diagnostic bit in the cyclic process data makes it easy to find problems with the equipment. It is possible to find problems with the equipment in real time using the cyclic (periodic) data and to monitor such problems in detail with the noncyclic (aperiodic) data.

For the PF3A7□H-L

Process Data

Bit offset	Item	Note	Diagnosis items
0	OUT1 output	0: OFF 1: ON	- Over current error - Rated flow error - Accumulated flow error - Flow sensor failure - Temperature sensor failure - Internal product malfunction
1	OUT2 output	0: OFF 1: ON	
8	Flow rate diagnosis	0: OFF 1: ON	
14	Fixed output	0: OFF 1: ON	
15	Error (Failure)	0: OFF 1: ON	
16 to 31	Measured flow rate value	Signed 16 bit	

Bit offset	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
Item	Measured flow rate value (PD)															
Bit offset	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Item	Error (Failure)	Fixed output	Reservation					Flow rate diagnosis	Reservation							OUT2 Switch output
																OUT1



For the PF3A8□H-L

Process Data

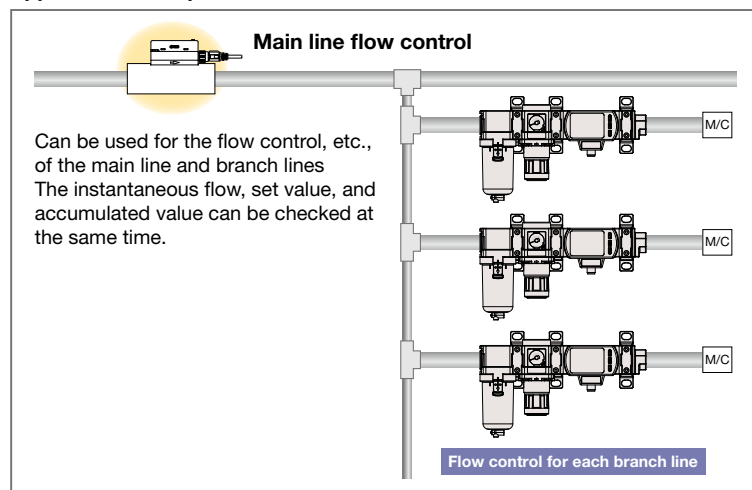
Bit offset	Item	Note	Bit offset	Item	Note
0	Accumulated flow SW1	0: OFF 1: ON	11	Temperature diagnosis	0: Normal 1: HHH/LLL
1	Accumulated flow SW2	0: OFF 1: ON	12	Pressure diagnosis	0: Normal 1: HHH/LLL
2	Flow rate SW1	0: OFF 1: ON	13	Fixed output	0: Normal output 1: Fixed output
3	Flow rate SW2	0: OFF 1: ON	14	Error	0: Normal 1: Abnormal
4	Temperature SW1	0: OFF 1: ON	15	System error	0: Normal 1: Abnormal
5	Temperature SW2	0: OFF 1: ON	16 to 31	Measured pressure value	Signed 16 bit
6	Pressure SW1	0: OFF 1: ON	32 to 47	Measured temperature value	Signed 16 bit
7	Pressure SW2	0: OFF 1: ON	48 to 63	Measured flow rate value	Signed 16 bit
8	Flow rate unit	0: L 1: ft3	64 to 79	Accumulated flow rate lower limit	Unsigned 32 bit
9	Flow rate criteria	0: STD 1: nor	80 to 95	Accumulated flow rate upper limit	
10	Flow rate diagnosis	0: Normal 1: HHH			

Bit offset	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	80
Item	Accumulated flow rate upper limit (PD)															
Bit offset	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64
Item	Accumulated flow rate lower limit (PD)															
Bit offset	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48
Item	Measured flow rate value (PD)															
Bit offset	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32
Item	Measured temperature value (PD)															
Bit offset	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
Item	Measured pressure value (PD)															
Bit offset	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Item	System error	Error	Fixed output	Pressure diagnosis	Temperature diagnosis	Flow rate diagnosis	Flow rate criteria	Flow rate unit	Pressure 2	Pressure 1	Temperature 2	Temperature 1	Flow rate 2	Flow rate 1	Accumulated flow 2	Accumulated flow 1

Diagnosis items
- Rated flow error - Above/Below the rated pressure range - Above/Below the rated temperature range - Error (Over current, Outside of zero-clear range, Version does not match) - System error (Flow/Temperature sensor failure, Internal malfunction)



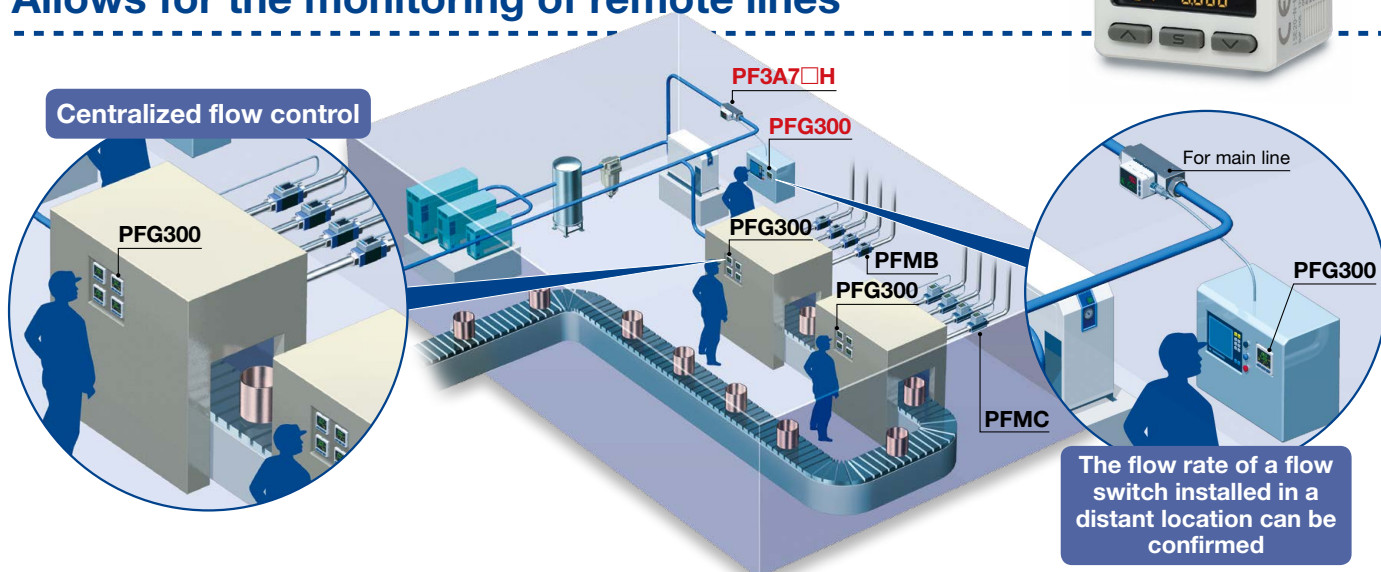
Application Example



3-Screen Display Digital Flow Monitor

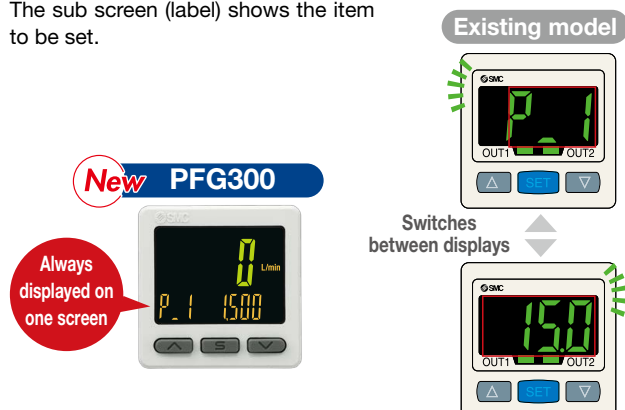
PFG300 Series p. 37

Allows for the monitoring of remote lines



Visualization of settings

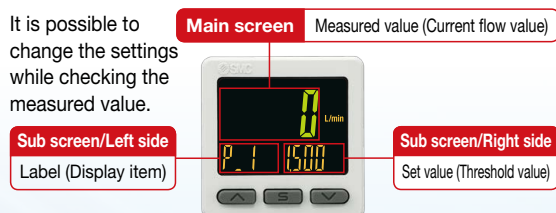
The sub screen (label) shows the item to be set.



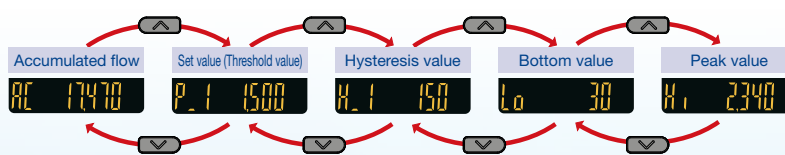
Hysteresis mode					
Normal output	Set value (Threshold value)	Reversed output	Set value (Threshold value)	Hysteresis	Set hysteresis value
P.L	1500	n.L	1500	H.L	150
Window comparator mode					
Normal output/Lo side	Set value (Threshold value)	Normal output/Hi side	Set value (Threshold value)		
P.L	900	P.H	1800		
Reversed output/Lo side	Set value (Threshold value)	Reversed output/Hi side	Set value (Threshold value)		
n.L	900	n.H	1800		

Easy screen switching

It is possible to change the settings while checking the measured value.



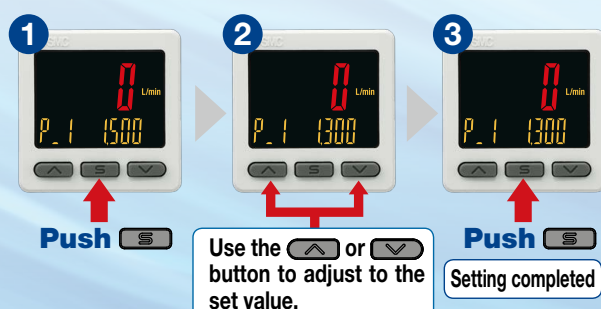
The sub screen can be switched by pressing the up/down buttons.



* Either "Input of line name" or "Display OFF" can be added via the function settings.

Simple 3-step setting

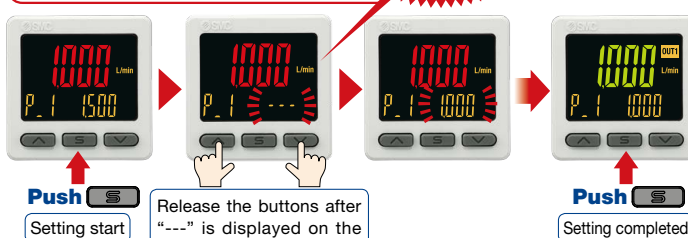
When the S button is pressed and the set value (P_1) is being displayed, the set value (threshold value) can be set. When the S button is pressed and the hysteresis (H_1) is being displayed, the hysteresis value can be set.



With a snap shot function for set value reading

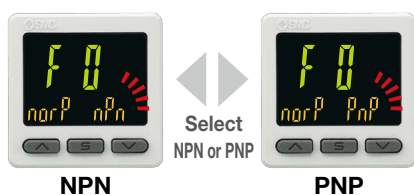
Pressing the $\uparrow$ and $\downarrow$ buttons simultaneously for a minimum of 1 second will make the set value (threshold value) the same as the current flow value.

Snap shot function



NPN/PNP switch function

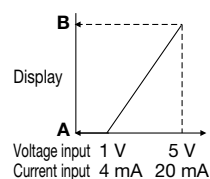
The number of stock items can be reduced.



Analog output of 0 to 10 V is also available.

Voltage output	1 to 5 V	Switchable
	0 to 10 V	
Current output	4 to 20 mA	Fixed

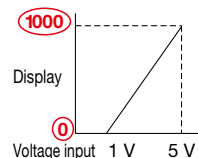
Input range selection (for Pressure/Flow rate)



The displayed value to the sensor input can be set as required.
(Voltage input: 1 to 5 V/Current input: 4 to 20 mA)
Pressure switch/Flow switch can be displayed.

A is displayed for 1 V (or 4 mA). B is displayed for 5 V (or 20 mA).
The range can be set as required.

■ Pressure Sensor for General Fluids/PSE570



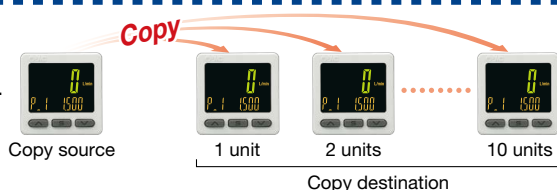
	A	B
PSE570	0	1000
PSE573	-100	100
PSE574	0	500

Set A and B to the values shown in the table above.

Convenient functions

● Copy function

The set values of the monitor can be copied.



● Security code

The key locking function keeps unauthorized persons from tampering with the settings.

● Power saving mode

Power consumption is reduced by turning off the monitor.

Current consumption*1	Reduction rate*2
25 mA or less	Approx. 50% reduction

*1 During normal operation *2 In power saving mode

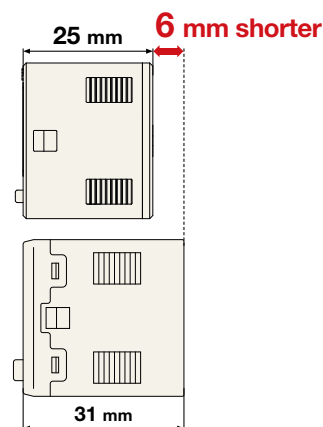
● External input function

The accumulated value, peak value, and bottom value can be reset remotely.

Compact & Lightweight

● Compact: Max. 6 mm shorter

● Lightweight: Max. 5 g lighter (30 g → 25 g)



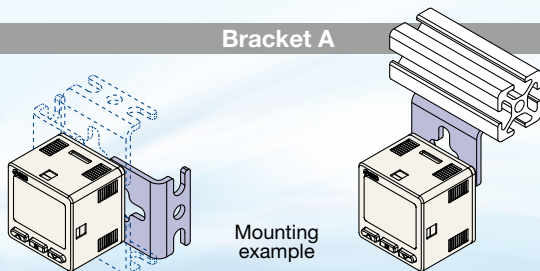
Functions

- Output operation
- Simple setting mode
- Display color
- Delay time setting
- Digital filter setting
- FUNC output switching function
- Selectable analog output function
- External input function
- Forced output function
- Accumulated value hold
- Peak/Bottom value display
- Setting of a security code
- Key-lock function
- Reset to the default settings
- Display with zero cut-off setting
- Selection of the display on the sub screen
- Analog output free range function
- Error display function
- Copy function
- Selection of power saving mode

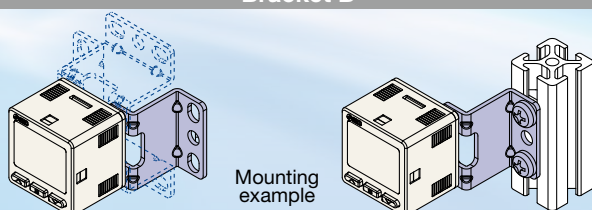
Mounting

The bracket configuration allows for mounting in four orientations.

Bracket A



Bracket B

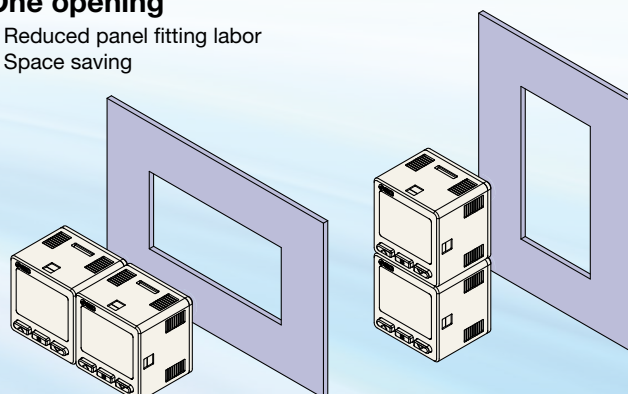


Panel mounting

Mountable side by side both vertically and horizontally

One opening

- Reduced panel fitting labor
- Space saving



Flow Switch Flow Rate Variations

Series		Applicable fluid	Detection method	Smallest settable increment	Rated flow range [L/min]																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
Compatibility with the PFG300 digital flow monitor					0.1	0.2	0.5	1	2	5	10	20	25	50	100	150	200	300	500	600	1000	2000	3000	6000	8000	12000																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
PF2A  PFG200 		Air N ₂	Thermal type (Thermistor)	0.1 L/min				1																			10																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
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PF3A□H(-L)  Body ported type pp. 13, 15  Modular type pp. 17, 19 PFG300 p. 37 		Air N ₂ Ar CO ₂	Thermal type (Platinum sensor)	2 L/min																					30																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																</

Flow Switch Variations / Basic Performance Table

Series	 PFMV5  PFGV301	 PF2M7(-L)  PFGM302	 PFMB  PFG300	 PF2MC7(-L)  PFG300	 PF2A  PFG200	 PF3A□H(-L) p. 13  PFG300 p. 37 
Enclosure	IP40	IP40	IP40	IP65 [Monitor unit: IP40]	IP65	IP65 [Monitor unit: IP40]
Fluid	Dry air, N ₂	Dry air, N ₂ , Ar, CO ₂	Dry air, N ₂	Dry air, N ₂	Air, N ₂	Air, N ₂ , Ar, CO ₂
Setting	Digital	Digital	Digital	Digital	Digital	Digital
Rated flow range [L/min]	0 to 0.1 0 to 0.5 0 to 1 0 to 3 -0.5 to 0.5 -1 to 1 -3 to 3	0.01 to 1 0.02 to 2 0.05 to 5 0.1 to 10 0.3 to 25 0.5 to 50 1 to 100 2 to 200	5 to 500 10 to 1000 20 to 2000	5 to 500 10 to 1000 20 to 2000	1 to 10 5 to 50 10 to 100 20 to 200 50 to 500	5 to 500 30 to 3000 60 to 6000 120 to 12000 10 to 1000 20 to 2000 40 to 4000 80 to 8000
Power supply voltage	12 to 24 VDC ±10%	PF2M7 12 to 24 VDC ±10% PF2M7-L 18 to 30 VDC ±10%	12 to 24 VDC ±10%	PFMC 12 to 24 VDC ±10% PFMC-L 18 to 30 VDC ±10%	12 to 24 VDC ±10%	PF3A7□H 24 VDC ±10% PF3A7□H-L 18 to 30 VDC ±10% PF3A7□H-L (Modular type) 21.6 to 30 VDC PF3A8□H-L 21.6 to 30 VDC
Temperature characteristics (25°C standard)	±2% F.S. (15 to 35°C) [Monitor unit: ±0.5% F.S. (0 to 50°C)] ±5% F.S. (0 to 50°C)	±3% F.S. ±1 digit (15 to 35°C) ±5% F.S. ±1 digit (0 to 50°C)	±2% F.S. (15 to 35°C) [Monitor unit: ±0.5% F.S. (0 to 50°C)] ±5% F.S. (0 to 50°C)	±2% F.S. (15 to 35°C) [Monitor unit: ±0.5% F.S. (0 to 50°C)] ±5% F.S. (0 to 50°C)	±3% F.S. (15 to 35°C) ±5% F.S. (0 to 50°C)	±5% F.S. [Monitor unit: ±0.5% F.S. (0 to 50°C)]
Repeatability	±2% F.S. (Fluid: Dry air) [Monitor unit: ±0.1% F.S. Analog output: ±5% F.S.] Analog output: ±0.3% F.S.	±1% F.S. ±1 digit (Fluid: Dry air)	±1% F.S. [Monitor unit: ±0.1% F.S.] (Fluid: Dry air)	±1% F.S. [Monitor unit: ±0.1% F.S.] (Fluid: Dry air)	±1% F.S. (PF2A7□0) ±2% F.S. (PF2A7□1)	±1% F.S. [Monitor unit: ±0.1% F.S.]
Hysteresis	Hysteresis mode: Variable Window comparator mode: Variable	Hysteresis mode: Variable Window comparator mode: Variable	Hysteresis mode: Variable Window comparator mode: Variable	Hysteresis mode: Variable Window comparator mode: Variable	Hysteresis mode: Variable Window comparator mode: Fixed (3 digits)	Hysteresis mode: Variable Window comparator mode: Variable
Output	NPN/PNP open collector Analog voltage output Analog current output	NPN/PNP open collector Accumulated pulse output Analog voltage output Analog current output IO-Link	NPN/PNP open collector Accumulated pulse output Analog voltage output Analog current output	NPN/PNP open collector Accumulated pulse output Analog voltage output Analog current output IO-Link	NPN/PNP open collector Accumulated pulse output	NPN/PNP open collector Accumulated pulse output Analog voltage output Analog current output IO-Link
Display	[Monitor unit: 2-color LCD display]	2-color LCD display	2-color LED display 2-color LCD display [Monitor unit: 3-color LCD display]	3-color LCD display	LED display	3-color LCD display

* The monitor unit values are for the PFG300 and PFMV3.

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3-Color Display Digital Flow Switch PF3A7□H Series

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Body Ported Type PF3A□H(-L)

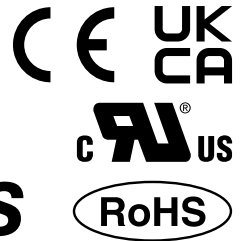
Modular Type PF3A□H(-L)

PFG300

Body Ported Type

3-Color Display Digital Flow Switch

PF3A7□H Series



How to Order



PF3A 7 03 H - 10 - CS - M

Type

7	Integrated display
---	--------------------

Rated flow range

03	30 to 3000 L/min
06	60 to 6000 L/min
12	120 to 12000 L/min

Large flow type

Thread type

Nil	Rc
N	NPT
F*1	G

*1 ISO 1179-1 compliant

Port size

Symbol	Port size	Rated flow range		
		03	06	12
10	1	●	—	—
14	1 1/2	—	●	—
20	2	—	—	●

Calibration certificate*8

Nil	None
A*9	Yes

*8 The certificate is in both English and Japanese.

*9 Made to order

Unit specification

Nil	Units selection function*6
M	SI units only*7

*6 This product is for overseas use only.
(The SI unit type is provided for use in Japan in accordance with the New Measurement Act.)

*7 Fixed units: Instantaneous flow: L/min
Accumulated flow: L

Options

Nil	With lead wire with M12 connector (3 m)*5
N	Without lead wire with M12 connector

*5 Options are shipped together with the product but do not come assembled.

Output specification

Symbol	OUT	FUNC*2	Applicable monitor unit model
CS	NPN	Analog voltage output*3 ⇔ External input*4	PFG300 series
DS	NPN	Analog current output ⇔ External input*4	PFG310 series
ES	PNP	Analog voltage output*3 ⇔ External input*4	PFG300 series
FS	PNP	Analog current output ⇔ External input*4	PFG310 series

*2 Analog output or external input can be selected by pressing the buttons. Analog output is set as default setting.

*3 1 to 5 V or 0 to 10 V can be selected by pressing the button. The default setting is 1 to 5 V.

*4 The accumulated value, peak value, and bottom value can be reset.

Option/Part No.

When only optional parts are required, order with the part number listed below.

Part no.	Option	Note
ZS-37-A	Lead wire with M12 connector	Length: 3 m



For flow switch precautions and specific product precautions, refer to the "Operation Manual" on the SMC website.

Specifications

Model		PF3A703H	PF3A706H	PF3A712H	
Fluid	Applicable fluid*1		Air, Nitrogen, Ar, CO2		
	Fluid temperature		0 to 50°C		
Flow	Detection method		Thermal type		
	Rated flow range		30 to 3000 L/min	60 to 6000 L/min 120 to 12000 L/min	
	Set point range*2	Instantaneous flow	30 to 4500 L/min	60 to 9000 L/min 120 to 18000 L/min	
		Accumulated flow	0 to 999,999,999,990 L	0 to 999,999,999,900 L	
	Smallest settable increment	Instantaneous flow	2 L/min	5 L/min	10 L/min
		Accumulated flow	10 L	100 L	
	Accumulated pulse	Converted value	Select from 50 L/pulse, 100 L/pulse, 500L/pulse, or 1000 L/pulse.		
		Pulse width	Variable from 50 to 100 ms/10 ms increments		
Accumulated value hold function*3		Intervals of 2 or 5 minutes can be selected.			
Pressure	Rated pressure range		0.1 to 1.5 MPa		
	Proof pressure		2.25 MPa		
	Pressure loss		Refer to the “Pressure Loss” graph on page 25.		
	Pressure characteristics*4		±2.5% F.S. (0.1 to 1.0 MPa, 0.5 MPa standard)		
Electrical	Power supply voltage		24 VDC ±10%		
	Current consumption		150 mA or less		
Accuracy*5	Protection		Polarity protection		
	Display accuracy		±3.0% F.S.		
	Analog output accuracy		±3.0% F.S.		
	Repeatability		Switch output/Display: ±1.0% F.S. Analog output: ±1.0% F.S.		
Temperature characteristics		±5.0% F.S. (Ambient temperature of 0 to 50°C, 25°C standard)			
Switch output	Output type		NPN open collector PNP open collector		
	Output mode		Select from Instantaneous output (Hysteresis mode or Window comparator mode), Accumulated output, or Accumulated pulse output.		
	Switch operation		Select from Normal or Reversed output.		
	Max. load current		60 mA		
	Max. applied voltage (NPN only)		28 VDC		
	Internal voltage drop (Residual voltage)		NPN output type: 1 V or less (at load current of 60 mA) PNP output type: 2 V or less (at load current of 60 mA)		
	Response time*6		Select from 1 s, 2 s, or 5 s.		
	Hysteresis*7		Variable from 0		
Analog output*8	Protection		Over current protection		
	Output type		Voltage output: 1 to 5 V (0 to 10 V can be selected*9), Current output: 4 to 20 mA		
	Impedance	Voltage output	Output impedance: Approx. 1 kΩ		
		Current output	Maximum load impedance: Approx. 600 Ω		
Response time*10		Linked to the response time of the switch output			
External input*11	Input type		No-voltage input: 0.4 V or less		
	Input mode		Select from Accumulated value external reset or Peak/Bottom value reset.		
	Input time		30 ms or longer		
Display	Reference condition*12		Select from Standard conditions or Normal conditions.		
	Unit*13	Instantaneous flow	L/min, CFM (ft³/min)		
		Accumulated flow	L, ft³		
	Display range*14	Instantaneous flow	0 to 4500 L/min (Flow under 30 L/min is displayed as “0”)	0 to 9000 L/min (Flow under 60 L/min is displayed as “0”)	0 to 18000 L/min (Flow under 120 L/min is displayed as “0”)
		Accumulated flow*15	0 to 999,999,999,990 L	0 to 999,999,999,900 L	
	Minimum display unit	Instantaneous flow	2 L/min	5 L/min	10 L/min
		Accumulated flow	10 L	100 L	
	Display		LCD, 2-screen display (Main screen/Sub screen) Main screen: Red/Green, Sub screen: Orange Main screen: 5 digits, 7 segment, Sub screen: 6 digits, 7 segment		
Environmental resistance	Indicator LED		OUT indicator: Red LED is ON when output is ON		
	Enclosure		IP65		
	Withstand voltage		1000 VAC for 1 minute between terminals and housing		
	Insulation resistance		50 MΩ (500 VDC measured via megohmmeter) between terminals and housing		
	Operating temperature range		Operating: 0 to 50°C, Stored: –10 to 60°C (No freezing or condensation)		
	Operating humidity range		Operating/Stored: 35 to 85% RH (No condensation)		
Standards		CE/UKCA marking, UL (CSA)			
Piping	Piping specification		Rc1, NPT1, G1	Rc1 1/2, NPT1 1/2, G1 1/2	Rc2, NPT2, G2
Main materials of parts in contact with fluid		Aluminum alloy, PPS, HNBR [Sensor: Pt, Au, Fe, Lead glass (exempted from the RoHS application), Al2O3]			
Length of lead wire with connector		3 m			
Weight	Piping specification	Rc	610 g	1190 g	1680 g
		NPT	610 g	1190 g	1680 g
		G	630 g	1220 g	1720 g
	Lead wire with connector		+90 g		

^{*1} The air quality class is according to JIS B 8392-1:2012 [6:6:4] and ISO8573-1:2010 [6:6:4]. Use an air filter with 5 μm or less filtration rating on the inlet side.
^{*2} Set point range will change according to the setting of the zero cut-off function.
^{*3} When using the accumulated value hold function, use the operating conditions to calculate the product life, and do not exceed it. The maximum update limit of the memory device is 1.5 million times. If the product is operated 24 hours per day, the product life will be as follows:
 · 5 min interval: life is calculated as 5 min x 1.5 million = 7.5 million min = 14.3 years
 · 2 min interval: life is calculated as 2 min x 1.5 million = 3 million min = 5.7 years
 If the accumulated value external reset is repeatedly used, the product life will be shorter than the calculated life.
^{*4} When the pressure range is 1.0 to 1.5 MPa, the pressure characteristics will be ±5% F.S. (standard pressure is 0.5 MPa). Do not release the OUT side piping port of the product to the atmosphere without connecting piping. If the product is used with the piping port released to atmosphere, accuracy may vary.
^{*5} The accuracy value is based on air as a fluid. For other fluids, it is a reference value.
^{*6} The time from when the flow is changed by a step input (when the flow rate changes from 0 to the maximum value of the rated flow range instantaneously) until the switch output turns ON (or OFF) when set to be 90% of the rated flow rate

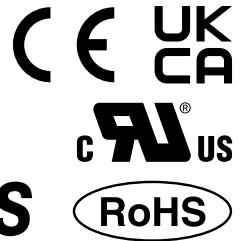
^{*7} If the flow fluctuates around the set value, the width for setting more than the fluctuating width needs to be set. Otherwise, chattering will occur.
^{*8} Analog output or external input can be selected by pressing the buttons. Refer to the graph for analog output.
^{*9} When selecting 0 to 10 V, refer to the analog output graph for the allowable load current.
^{*10} The time from when the flow is changed by a step input (when the flow rate changes from 0 to the maximum value of the rated flow range instantaneously) until the analog output reaches 90% of the rated flow rate
^{*11} Analog output or external input can be selected by pressing the buttons.
^{*12} The flow rate given in the specifications is the value under standard conditions.
^{*13} Setting is only possible for models with the units selection function.
^{*14} Display range will change according to the setting of the zero cut-off function.
^{*15} The accumulated flow display is the upper 6-digit and lower 6-digit (total of 12 digits) display. The upper 6 digits and the lower 6 digits are displayed alternately, with "x 10⁹" lighting up when the upper digits are displayed.
 * Products with tiny scratches, marks, or display color or brightness variations which do not affect the performance of the product are verified as conforming products.

Body Ported Type

IO-Link

3-Color Display Digital Flow Switch

PF3A7□H-L Series



How to Order



PF3A 7 03 H - 10 - L Q - M

Type

7	Integrated display
---	--------------------

Rated flow range

03	30 to 3000 L/min
06	60 to 6000 L/min
12	120 to 12000 L/min

Large flow type

Thread type

Nil	Rc
N	NPT
F*1	G

*1 ISO 1179-1 compliant

Port size

Symbol	Port size	Rated flow range		
		03	06	12
10	1	●	—	—
14	1 1/2	—	●	—
20	2	—	—	●

Calibration certificate*9

Nil	None
A*10	Yes

*9 The certificate is in both English and Japanese.

*10 Made to order

Unit specification

Nil	Units selection function*7
M	SI units only*8

*7 This product is for overseas use only. (The SI unit type is provided for use in Japan in accordance with the New Measurement Act.)

*8 Fixed units: Instantaneous flow: L/min
Accumulated flow: L

Options

Nil	With lead wire with M12 connector (3 m)*5
N	Without lead wire with M12 connector
Q	Lead wire with M12-M12 connector (3 m)*6

*5 Options are shipped together with the product but do not come assembled.

*6 The lead wire has an M12 (female) connector on one side and an M12 (male) connector on the other side.

Output specification

Symbol	OUT	FUNC*2	Applicable monitor unit model
L	IO-Link: Switch output (N/P)	—	—
L3	IO-Link: Switch output (N/P)	Analog voltage output*3 ⇔ External input*4	PFG300 series
L4	IO-Link: Switch output (N/P)	Analog current output ⇔ External input*4	PFG310 series

*2 Analog output or external input can be selected by pressing the buttons. Analog output is set as default setting.

Output symbol "L" cannot be used as the FUNC terminal is not connected.

*3 1 to 5 V or 0 to 10 V can be selected by pressing the button. The default setting is 1 to 5 V.

*4 The accumulated value, peak value, and bottom value can be reset.

Options/Part Nos.

When only optional parts are required, order with the part numbers listed below.

Part no.	Option	Note
ZS-37-A	Lead wire with M12 connector	Length: 3 m
ZS-49-A	Lead wire with M12-M12 connector	Male/female conversion, Length: 3 m



For flow switch precautions and specific product precautions, refer to the "Operation Manual" on the SMC website.

Specifications

Model			PF3A703H-L	PF3A706H-L	PF3A712H-L
Electrical	Power supply voltage	When used as a switch output device	24 VDC ±10%		
		When used as an IO-Link device	18 to 30 VDC ±10%		
Switch output	Output type		Select from NPN or PNP open collector output.		
	Output mode		Select from Hysteresis, Window comparator, Accumulated output, Accumulated pulse output, Error output, or Switch output OFF modes.		
	Max. applied voltage		30 V (NPN output)		
	Internal voltage drop (Residual voltage)		1.5 V or less (at load current of 80 mA)		
	Delay time*1		3.3 ms or less, variable from 0 to 60 s/0.01 s increments		
Analog output	Response time*2		Linked to the set value of the digital filter		
Display	Display		LCD, 2-screen display (Main screen/Sub screen) Main screen: Red/Green, Sub screen: Orange Main screen/Sub screen: 9 digits (7 segments 7 digits, 11 segments 2 digits)		
	Digital filter*3		Select from 1 s, 2 s, or 5 s.		
Standards			CE/UKCA marking, UL (CSA)		

*1 The time from when the instantaneous flow reaches the set value to when the switch output operates can be set.

*2 The time from when the flow is changed by a step input (when the flow rate changes from 0 to the maximum value of the rated flow range instantaneously) until the analog output reaches 90% of the rated flow rate

*3 The time for the digital filter can be set to the sensor input. The response time indicates when the set value is 90% in relation to the step input.

Communication Specifications (IO-Link mode)

IO-Link type	Device
IO-Link version	V 1.1
Communication speed	COM2 (38.4 kbps)
Configuration file	IODD file*1
Minimum cycle time	3.3 ms
Process data length	Input data: 4 bytes, Output data: 0 bytes
On request data communication	Yes
Data storage function	Yes
Event function	Yes
Vendor ID	131 (0 x 0083)
Device ID*2	PF3A703H-□□-□□-□□ : 400 (0 x 0190)
	PF3A703H-□□-□□-□□ : 401 (0 x 0191)
	PF3A703H-□□-□□-□□ : 402 (0 x 0192)
	PF3A706H-□□-□□-□□ : 403 (0 x 0193)
	PF3A706H-□□-□□-□□ : 404 (0 x 0194)
	PF3A706H-□□-□□-□□ : 405 (0 x 0195)
	PF3A712H-□□-□□-□□ : 406 (0 x 0196)
	PF3A712H-□□-□□-□□ : 407 (0 x 0197)
	PF3A712H-□□-□□-□□ : 408 (0 x 0198)

*1 The configuration file can be downloaded from the SMC website, <https://www.smcworld.com>

*2 The device ID differs according to each product type (output specification).

Other specifications that are not listed are the same as those of the standard product. For details, refer to page 14.

Body Ported Type PF3A□H(-L)

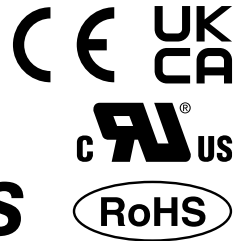
Modular Type PF3A□H(-L)

PFG300

Modular Type

3-Color Display Digital Flow Switch

PF3A7□H Series



How to Order



PF3A 7 01 H - CS □ - M □ - □

Type

7	Integrated display
---	--------------------

Rated flow range

Symbol	Rated flow range	Applicable air combination model
R5	5 to 500 L/min	AC20-D
01	10 to 1000 L/min	AC30-D
02	20 to 2000 L/min	AC40-D
04	40 to 4000 L/min	AC50-D, AC60-D
08	80 to 8000 L/min	AC50-D, AC60-D

Large flow type

Output specification

Symbol	OUT	FUNC*1	Applicable monitor unit model
CS	NPN	Analog voltage output*2 ⇔ External input*3	PFG300 series
DS	NPN	Analog current output ⇔ External input*3	PFG310 series
ES	PNP	Analog voltage output*2 ⇔ External input*3	PFG300 series
FS	PNP	Analog current output ⇔ External input*3	PFG310 series

- *1 Analog output or external input can be selected by pressing the buttons. Analog output is set as default setting.
- *2 1 to 5 V or 0 to 10 V can be selected by pressing the button. The default setting is 1 to 5 V.
- *3 The accumulated value, peak value, and bottom value can be reset.

Options/Part Nos.

When only optional parts are required, order with the part numbers listed below.

Part no.	Option	Note
ZS-37-A	Lead wire with M12 connector	Length: 3 m
ZS-49-A	Lead wire with M12-M12 connector	Male/female conversion, Length: 3 m

Flow direction

Nil	Left to right
R	Right to left

Calibration certificate*8

Nil	None
A*9	Yes

- *8 The certificate is in both English and Japanese.
- *9 Made to order

Unit specification

Nil	Units selection function*6
M	SI units only*7

- *6 This product is for overseas use only. (The SI unit type is provided for use in Japan in accordance with the New Measurement Act.)
- *7 Fixed units: Instantaneous flow: L/min
Accumulated flow: L

Option*4

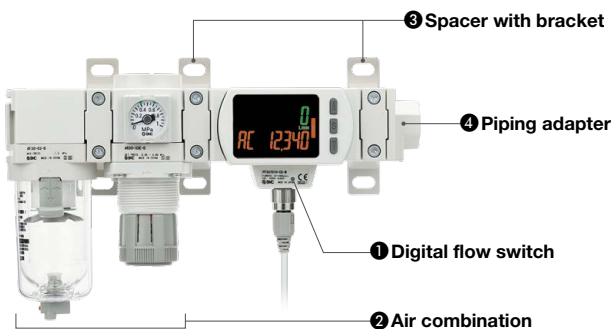
Nil	With lead wire with connector (3 m)
N	Without lead wire with connector
Q	Lead wire with M12-M12 connector (3 m)*5

- *4 Options are shipped together with the product but do not come assembled.
- *5 The lead wire has an M12 (female) connector on one side and an M12 (male) connector on the other side.

Caution on Mounting

Pipe threads are not provided for this product. If the product is to be used as a single unit, order a spacer (or spacer with bracket) and a piping adapter separately. Refer to page 35 for details on attachments.

Assembly Example



- * Avoid mounting the lubricator on the inlet side.
- * If a pressure relief 3-port valve is installed on the inlet side of the digital flow switch, causing a backflow of air, the measured value will change.

Assembly example

① Digital flow switch PF3A701H-CS-M	1 pc.
② Air combination AC30B-03E-D	1 pc.
③ Spacer with bracket Y300T-D	2 pcs.
④ Piping adapter E300-03-D	1 pc.

Products do not come assembled. They should be ordered separately and assembled by the customer.



Simple Specials System

A system designed to respond quickly and easily to your special ordering needs

Please contact your local sales representative for more details.



For flow switch precautions and specific product precautions, refer to the "Operation Manual" on the SMC website.

Specifications

Model			PF3A7R5H	PF3A701H	PF3A702H	PF3A704H	PF3A708H
Fluid	Applicable fluid*1		Air, Nitrogen, Ar, CO2				
	Fluid temperature		0 to 50°C				
Flow	Detection method		Thermal type (Bypass flow type)				
	Rated flow range		5 to 500 L/min	10 to 1000 L/min	20 to 2000 L/min	40 to 4000 L/min	80 to 8000 L/min
	Set point range*2	Instantaneous flow	5 to 750 L/min	10 to 1500 L/min	20 to 3000 L/min	40 to 6000 L/min	80 to 12000 L/min
		Accumulated flow	0 to 999,999,999,990 L				0 to 999,999,999,900 L
	Smallest settable increment	Instantaneous flow	1 L/min		2 L/min		5 L/min
		Accumulated flow	10 L				100 L
	Accumulated pulse	Converted value	Select from 1 L/pulse, 10 L/pulse, 50 L/pulse, or 100 L/pulse.	Select from 10 L/pulse, 50 L/pulse, 100 L/pulse, or 500 L/pulse.		Select from 50 L/pulse, 100 L/pulse, 500 L/pulse, or 1000 L/pulse.	
		Pulse width	Variable from 50 to 100 ms/10 ms increments				
Accumulated value hold function*3		Intervals of 2 or 5 minutes can be selected.					
Pressure	Rated pressure range		0 to 1.0 MPa				
	Proof pressure		1.5 MPa				
	Pressure loss		Refer to the "Pressure Loss" graph on page 25.				
	Pressure characteristics*4		±5.0% F.S. (0 to 1.0 MPa, 0.5 MPa standard)				
Electrical	Power supply voltage		24 VDC ±10%				
	Current consumption		150 mA or less				
	Protection		Polarity protection				
Accuracy*5	Display accuracy*6		±3.0% F.S.				
	Analog output accuracy*6		±3.0% F.S.				
	Repeatability		±1.0% F.S.				
	Temperature characteristics		±5.0% F.S. (Ambient temperature of 0 to 50°C, 25°C standard)				
	Effects of connecting modular products*7		±5.0% F.S.				
Switch output	Output type		NPN open collector, PNP open collector				
	Output mode		Select from Instantaneous output (Hysteresis mode or Window comparator mode), Accumulated output, or Accumulated pulse output.				
	Switch operation		Select from Normal or Reversed output.				
	Max. load current		60 mA				
	Max. applied voltage (NPN only)		28 VDC				
	Internal voltage drop (Residual voltage)		NPN output type: 1 V or less (at load current of 60 mA), PNP output type: 2 V or less (at load current of 60 mA)				
	Response time*8		Select from 1 s, 2 s, or 5 s.				
	Hysteresis*9		Variable from 0				
Analog output*10	Protection		Over current protection				
	Output type		Voltage output: 1 to 5 V (0 to 10 V can be selected*11), Current output: 4 to 20 mA				
	Impedance	Voltage output	Output impedance: Approx. 1 kΩ				
		Current output	Maximum load impedance: 600 Ω, Minimum load impedance: 50 Ω				
External input*13	Response time*12		Linked to the response time of the switch output				
	Input type		No-voltage input: 0.4 V or less				
	Input mode		Select from Accumulated value external reset or Peak/Bottom value reset.				
Display	Input time		30 ms or longer				
	Reference condition*14		Select from Standard conditions or Normal conditions.				
	Unit*15	Instantaneous flow	L/min, CFM (ft³/min)				
		Accumulated flow	L, ft³				
	Display range*16	Instantaneous flow	0 to 750 L/min	0 to 1500 L/min	0 to 3000 L/min	0 to 6000 L/min	0 to 12000 L/min
		Accumulated flow*17	0 to 999,999,999,990 L				0 to 999,999,999,900 L
	Minimum display unit	Instantaneous flow	1 L/min		2 L/min		5 L/min
		Accumulated flow	10 L				100 L
Environmental resistance	Display		LCD, 2-screen display (Main screen/Sub screen) Main screen: Red/Green, Sub screen: Orange Main screen: 4 digits, 7 segment, Sub screen: 6 digits, 7 segment				
	Indicator LED		OUT indicator: Red LED is ON when output is ON				
	Enclosure		IP65				
	Withstand voltage		1000 VAC for 1 minute between terminals and housing				
	Insulation resistance		50 MΩ (500 VDC measured via megohmmeter) between terminals and housing				
Operating temperature range		Operating: 0 to 50°C, Stored: -10 to 60°C (No freezing or condensation)					
Operating humidity range		Operating/Stored: 35 to 85% RH (No condensation)					
Standards			CE/UKCA marking, UL (CSA)				
Piping	Piping specification		Modular (Body size: 20)	Modular (Body size: 30)	Modular (Body size: 40)	Modular (Body size: 50, 60)	Modular (Body size: 50, 60)
Main materials of parts in contact with fluid			Stainless steel 304, Aluminum alloy, PPS, HNBR [Sensor: Pt, Au, Ni, Fe, Lead glass (exempted from the RoHS application), Al2O3]				
Length of lead wire with connector			3 m				
Weight	Body		350 g	350 g	400 g	720 g	720 g
	Lead wire with connector		+90 g				

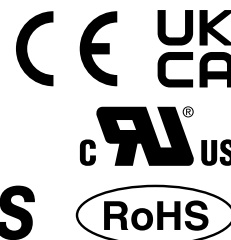
- ^{*1} The air quality class is according to JIS B 8392-1:2012 [6:6:4] and ISO8573-1:2010 [6:6:4]. Use an air filter with 5 μm or less filtration rating on the inlet side.
- ^{*2} Set point range will change according to the setting of the zero cut-off function.
- ^{*3} When using the accumulated value hold function, use the operating conditions to calculate the product life, and do not exceed it. The maximum update limit of the memory device is 1.5 million times. If the product is operated 24 hours per day, the product life will be as follows:
 · 5 min interval: life is calculated as 5 min x 1.5 million = 7.5 million min = 14.3 years
 · 2 min interval: life is calculated as 2 min x 1.5 million = 3 million min = 5.7 years
 If the accumulated value external reset is repeatedly used, the product life will be shorter than the calculated life.
- ^{*4} Do not release the OUT side piping port of the product to the atmosphere without connecting piping. If the product is used with the piping port released to atmosphere, accuracy may vary.
- ^{*5} The accuracy value is based on air as a fluid. For other fluids, it is a reference value.
- ^{*6} The value when connecting a product with a port size of 1/4 (PF3A7R5H), 3/8 (PF3A701H), 1/2 (PF3A702H), or 1 (PF3A704H, PF3A708H)
- ^{*7} The value when the port size of the modular product is 1/4 (PF3A7R5H), 3/8 (PF3A701H), 1/2 (PF3A702H), or 1 (PF3A704H, PF3A708H) and the product is operated at a supply pressure of 0.5 MPa
- ^{*8} The time from when the flow is changed by a step input (when the flow rate

- changes from 0 to the maximum value of the rated flow range instantaneously) until the switch output turns ON (or OFF) when set to be 90% of the rated flow rate
- ^{*9} If the flow fluctuates around the set value, the width for setting more than the fluctuating width needs to be set. Otherwise, chattering will occur.
- ^{*10} Analog output or external input can be selected by pressing the buttons. Refer to the graph for analog output.
- ^{*11} When selecting 0 to 10 V, refer to the analog output graph for the allowable load current.
- ^{*12} The time from when the flow is changed by a step input (when the flow rate changes from 0 to the maximum value of the rated flow range instantaneously) until the analog output reaches 90% of the rated flow rate
- ^{*13} Analog output or external input can be selected by pressing the buttons.
- ^{*14} The flow rate given in the specifications is the value under standard conditions.
- ^{*15} Setting is only possible for models with the units selection function.
- ^{*16} Display range will change according to the setting of the zero cut-off function.
- ^{*17} The accumulated flow display is the upper 6-digit and lower 6-digit (total of 12 digits) display. The upper 6 digits and the lower 6 digits are displayed alternately, with "x 10⁶" lighting up when the upper digits are displayed.
- * Products with tiny scratches, marks, or display color or brightness variations which do not affect the performance of the product are verified as conforming products.

Modular Type  IO-Link

3-Color Display Digital Flow Switch

PF3A7□H-L Series



How to Order



PF3A 7 01 H-L Q-M

Type

7 Integrated display

Rated flow range

Symbol	Rated flow range	Applicable air combination model
R5	5 to 500 L/min	AC20-D
01	10 to 1000 L/min	AC30-D
02	20 to 2000 L/min	AC40-D
04	40 to 4000 L/min	AC50-D, AC60-D
08	80 to 8000 L/min	AC50-D, AC60-D

Large flow type

Output specification

Symbol	OUT	FUNC*1	Applicable monitor unit model
L	IO-Link/Switch output (N/P)	—	—
L3	IO-Link/Switch output (N/P)	Analog voltage output*2 ↔ External input*3	PFG300 series
L4	IO-Link/Switch output (N/P)	Analog current output ↔ External input*3	PFG310 series

*1 Analog output or external input can be selected by pressing the buttons. Analog output is set as default setting.

*2 1 to 5 V or 0 to 10 V can be selected by pressing the button. The default setting is 1 to 5 V.

*3 The accumulated value, peak value, and bottom value can be reset.

Options/Part Nos.

When only optional parts are required, order with the part numbers listed below.

Part no.	Option	Note
ZS-37-A	Lead wire with M12 connector	Length: 3 m
ZS-49-A	Lead wire with M12-M12 connector	Male/female conversion, Length: 3 m

Flow direction

Nil	Left to right
R	Right to left

Calibration certificate*8

Nil	None
A*9	Yes

*8 The certificate is in both English and Japanese.

*9 Made to order

Unit specification

Nil	Units selection function*6
M	SI units only*7

*6 This product is for overseas use only. (The SI unit type is provided for use in Japan in accordance with the New Measurement Act.)

*7 Fixed units: Instantaneous flow: L/min
Accumulated flow: L

Option*4

Nil	With lead wire with M12 connector (3 m)
N	Without lead wire with M12 connector
Q	Lead wire with M12-M12 connector (3 m)*5

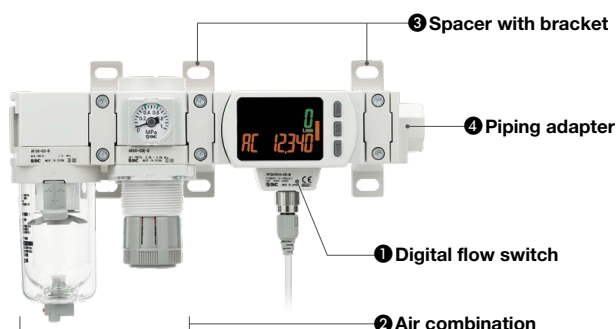
*4 Options are shipped together with the product but do not come assembled.

*5 The lead wire has an M12 (female) connector on one side and an M12 (male) connector on the other side.

Caution on Mounting

Pipe threads are not provided for this product. If the product is to be used as a single unit, order a spacer (or spacer with bracket) and a piping adapter separately. Refer to page 35 for details on attachments.

Assembly Example



- * Avoid mounting the lubricator on the inlet side.
- * If a pressure relief 3-port valve is installed on the inlet side of the digital flow switch, causing a backflow of air, the measured value will change.

Assembly example

- ① Digital flow switch PF3A701H-L-M 1 pc.
- ② Air combination AC30B-03E-D 1 pc.
- ③ Spacer with bracket Y300T-D 2 pcs.
- ④ Piping adapter E300-03-D 1 pc.

Products do not come assembled. They should be ordered separately and assembled by the customer.



Simple Specials System

A system designed to respond quickly and easily to your special ordering needs

Please contact your local sales representative for more details.



For flow switch precautions and specific product precautions, refer to the "Operation Manual" on the SMC website.

Specifications

Model			PF3A7R5H	PF3A701H	PF3A702H	PF3A704H	PF3A708H
Electrical	Power supply voltage	When used as a switch output device	24 VDC ±10%				
		When used as an IO-Link device	21.6 to 30 VDC				
Switch output	Output type		Select from NPN or PNP open collector output.				
	Output mode		Select from Hysteresis, Window comparator, Accumulated output, Accumulated pulse output, Error output, or Switch output OFF modes.				
	Max. applied voltage		30 V (NPN output)				
	Internal voltage drop (Residual voltage)		1.5 V or less (at load current of 80 mA)				
	Delay time*1		3.3 ms or less, variable from 0 to 60 s/0.01 s increments				
Analog output	Response time*2		Linked to the set value of the digital filter				
Display	Display		LCD, 2-screen display (Main screen/Sub screen) Main screen: Red/Green, Sub screen: Orange Main screen/Sub screen: 9 digits (7 segments 7 digits, 11 segments 2 digits)				
	Digital filter*3		Select from 1 s, 2 s, or 5 s.				
Standards			CE/UKCA marking, UL (CSA)				

*1 The time from when the instantaneous flow reaches the set value to when the switch output operates can be set.

*2 The time from when the flow is changed by a step input (when the flow rate changes from 0 to the maximum value of the rated flow range instantaneously) until the analog output reaches 90% of the rated flow rate

*3 The time for the digital filter can be set to the sensor input. The response time indicates when the set value is 90% in relation to the step input.

Communication Specifications (IO-Link mode)

IO-Link type	Device
IO-Link version	V 1.1
Communication speed	COM2 (38.4 kbps)
Configuration file	IODD file*1
Minimum cycle time	3.3 ms
Process data length	Input data: 4 bytes, Output data: 0 bytes
On request data communication	Yes
Data storage function	Yes
Event function	Yes
Vendor ID	131 (0 x 0083)
Device ID*2	PF3A7R5H-□□-□□-□□ : 738 (0 x 02E2)
	PF3A7R5H-□□-□□-□□ : 739 (0 x 02E3)
	PF3A7R5H-□□-□□-□□ : 740 (0 x 02E4)
	PF3A701H-□□-□□-□□ : 394 (0 x 018A)
	PF3A701H-□□-□□-□□ : 395 (0 x 018B)
	PF3A701H-□□-□□-□□ : 396 (0 x 018C)
	PF3A702H-□□-□□-□□ : 397 (0 x 018D)
	PF3A702H-□□-□□-□□ : 398 (0 x 018E)
	PF3A702H-□□-□□-□□ : 399 (0 x 018F)
	PF3A704H-□□-□□-□□ : 741 (0 x 02E5)
	PF3A704H-□□-□□-□□ : 742 (0 x 02E6)
	PF3A704H-□□-□□-□□ : 743 (0 x 02E7)
	PF3A708H-□□-□□-□□ : 744 (0 x 02E8)
	PF3A708H-□□-□□-□□ : 745 (0 x 02E9)
	PF3A708H-□□-□□-□□ : 746 (0 x 02EA)

*1 The configuration file can be downloaded from the SMC website, <https://www.smcworld.com>

*2 The device ID differs according to each product type (output specification).

Other specifications that are not listed are the same as those of the standard product. For details, refer to page 18.

Body Ported Type PF3A□H(-L)

Modular Type PF3A□H(-L)

PFG300

Modular Type



IO-Link

UK
CA

US



RoHS

4-Screen Display

Digital Flow Switch with Pressure/Temperature Sensor

PF3A8□H-L Series

How to Order



PF3A 8 01 H-L2 Q-M - -

Type

8 With pressure/temperature sensor

Rated flow range

Symbol	Rated flow range	Applicable air combination model
R5	5 to 500 L/min	AC20-D
01	10 to 1000 L/min	AC30-D
02	20 to 2000 L/min	AC40-D
04	40 to 4000 L/min	AC50-D, AC60-D
08	80 to 8000 L/min	AC50-D, AC60-D

Output specification

Symbol	OUT1	OUT2
L2	IO-Link/Switch output (N/P)	Switch output (N/P)

Option*1

Nil	With lead wire with M12 connector (3 m)
N	Without lead wire with M12 connector
Q	Lead wire with M12-M12 connector (3 m)*2

*1 Options are shipped together with the product but do not come assembled.

*2 The lead wire has an M12 (female) connector on one side and an M12 (male) connector on the other side.

Flow direction

Nil	Left to right
R	Right to left

**Calibration certificate*5
(For flow/pressure sensors only)**

Nil	None
A	Yes

*5 The certificate is in both English and Japanese.

* Made to order

Unit specification

Nil	Units selection function*3
M	SI units only*4

*3 This product is for overseas use only. (The SI unit type is provided for use in Japan in accordance with the New Measurement Act.)

*4 Fixed units: Instantaneous flow: L/min
Accumulated flow : L
Pressure : kPa, MPa
Temperature : °C**Options/Part Nos.**

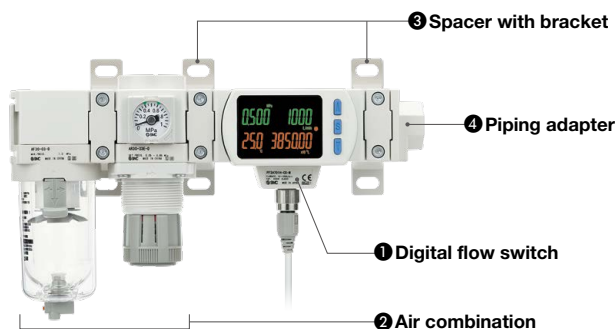
When only optional parts are required, order with the part numbers listed below.

Part no.	Option	Note
ZS-37-A	Lead wire with M12 connector	Length: 3 m
ZS-49-A	Lead wire with M12-M12 connector	Male/female conversion, Length: 3 m

Caution on Mounting

Pipe threads are not provided for this product. If the product is to be used as a single unit, order a spacer (or spacer with bracket) and a piping adapter separately. Refer to page 35 for details on attachments.

Assembly Example

**Assembly example**

① Digital flow switch PF3A801H-L2-M	1 pc.
② Air combination AC30B-03E-D	1 pc.
③ Spacer with bracket Y300T-D	2 pcs.
④ Piping adapter E300-03-D	1 pc.

Products do not come assembled. They should be ordered separately and assembled by the customer.

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* Avoid mounting the lubricator on the inlet side.

* If a pressure relief 3-port valve is installed on the inlet side of the digital flow switch, causing a backflow of air, the measured value will change.



For flow switch precautions and specific product precautions, refer to the "Operation Manual" on the SMC website.



Specifications

Model			PF3A8R5H	PF3A801H	PF3A802H	PF3A804H	PF3A808H
Fluid	Applicable fluid*1		Air, Nitrogen, Ar, CO2				
	Fluid temperature		0 to 50°C				
Flow	Detection method		Thermal type (Bypass flow type)				
	Rated flow range		5 to 500 L/min	10 to 1000 L/min	20 to 2000 L/min	40 to 4000 L/min	80 to 8000 L/min
	Set point range*2	Instantaneous flow	5 to 750 L/min	10 to 1500 L/min	20 to 3000 L/min	40 to 6000 L/min	80 to 12000 L/min
		Accumulated flow	0 to 9,999,999,990 L				
	Smallest settable increment	Instantaneous flow	1 L/min		2 L/min		5 L/min
		Accumulated flow	100 L				
	Accumulated pulse	Converted value	Select from 1 L/pulse, 10 L/pulse, 50 L/pulse, or 100 L/pulse.	Select from 10 L/pulse, 50 L/pulse, 100 L/pulse, or 500 L/pulse.		Select from 50 L/pulse, 100 L/pulse, 500 L/pulse, or 1000 L/pulse.	
		Pulse width	Variable from 50 to 100 ms/10 ms increments				
Accumulated value hold function*3		Intervals of 2 or 5 minutes can be selected.					
Pressure	Rated pressure range		0.000 to 1.000 MPa				
	Set pressure range*2		-0.050 to 1.050 MPa				
	Smallest settable increment		0.001 MPa				
	Proof pressure		1.5 MPa				
	Pressure loss		Refer to the “Pressure Loss” graph on page 25.				
Temperature	Rated temperature range		0.0 to 50.0°C				
	Set temperature range		-10.0 to 60.0°C				
	Smallest settable increment		0.1°C				
Electrical	Power supply voltage		21.6 to 30 VDC				
	Current consumption		150 mA or less				
	Protection		Polarity protection				
Accuracy*4	Accuracy	Flow rate*5	±3.0% F.S.				
		Pressure	±3.0% F.S.				
		Temperature*6	±2.5°C (Flow range: 10 to 100% F.S.)				
	Repeatability (Flow rate/Pressure)		±1.0% F.S.				
	Temperature characteristics (Flow rate/Pressure)		±5.0% F.S. (Ambient temperature of 0 to 50°C, 25°C standard)				
	Pressure characteristics (Flow rate)*7		±5.0% F.S. (0 to 1.0 MPa, 0.5 MPa standard)				
Switch output	Effects of connecting modular products (Flow rate)*8		±5.0% F.S.				
	Output type		Select from NPN or PNP open collector. (2 outputs)				
	Output mode		Hysteresis mode, Window comparator mode, Error output, Output OFF, Accumulated output, Accumulated pulse output (Only flow rate)				
	Switch operation		Select from Normal or Reversed output.				
	Max. load current		60 mA				
	Max. applied voltage (NPN only)		30 VDC				
	Internal voltage drop (Residual voltage)		1.5 V or less (at load current of 60 mA)				
	Response time		5 ms or less				
	Delay time*9		Variable from 0 to 60 s/0.01 s increments				
	Hysteresis*10		Variable from 0				
Display	Protection		Over current protection				
	Reference condition*11		Select from Standard conditions or Normal conditions.				
	Unit*12	Instantaneous flow	L/min, CFM (ft³/min)				
		Accumulated flow	L, ft³				
		Pressure	MPa, KPa, kgf/cm², bar, psi				
		Temperature	°C, °F				
	Display range	Instantaneous flow*13	0 to 750 L/min	0 to 1500 L/min	0 to 3000 L/min	0 to 6000 L/min	0 to 12000 L/min
		Accumulated flow	0 to 9,999,999,990 L				
		Pressure*13	-0.050 to 1.050 MPa				
		Temperature	-10.0 to 60.0°C				
	Min. display unit	Instantaneous flow	1 L/min		2 L/min		5 L/min
		Accumulated flow	10 L				
		Pressure	0.001 MPa				
		Temperature	0.1°C				
	Display	LCD, 4-screen display					
Upper line: Red/Green, Lower line: Orange Upper/Lower line: 10 digits (7 segments 5 digits, 11 segments 5 digits)							
Digital filter*14	Indicator LED		OUT indicator: Orange LED is ON when output is ON				
	Flow rate		1 s (2 s or 5 s can be selected.)				
	Pressure		0.1 s (Variable from 0 to 30 s/0.01 s increments)				
	Temperature		1 s				
Environmental resistance	Enclosure		IP65				
	Withstand voltage		1000 VAC for 1 minute between terminals and housing				
	Insulation resistance		50 MΩ (500 VDC measured via megohmmeter) between terminals and housing				
	Operating temperature range		Operating: 0 to 50°C, Stored: -10 to 60°C (No freezing or condensation)				
Operating humidity range		Operating/Stored: 35 to 85% RH (No condensation)					
Standards			CE/UKCA marking, UL (CSA)				
Piping	Piping specification		Modular (Body size: 20)	Modular (Body size: 30)	Modular (Body size: 40)	Modular (Body size: 50, 60)	Modular (Body size: 50, 60)
Main materials of parts in contact with fluid			Stainless steel 304, Aluminum alloy, PPS, HNBR [Sensor: Pt, Au, Ni, Fe, Lead glass (exempted from the RoHS application), Al2O3]				
Length of lead wire with connector			3 m				
Weight	Body		350 g	350 g	400 g	720 g	720 g
	Lead wire with connector		+90 g				

*1 The air quality class is according to JIS B 8392-1:2012 [6:6:4] and ISO 8573-1:2010 [6:6:4]. Use an air filter with 5 μm or less filtration rating on the inlet side.

*2 Set point range will change according to the setting of the zero cut-off function.

*3 When using the accumulated value hold function, use the operating conditions to calculate the product life, and do not exceed it. The maximum update limit of the memory device is 1.5 million times. If the product is operated 24 hours per day, the product life will be as follows:

- 5 min interval: life is calculated as 5 min x 1.5 million = 7.5 million min = 14.3 years
- 2 min interval: life is calculated as 2 min x 1.5 million = 3 million min = 5.7 years

If the accumulated value external reset is repeatedly used, the product life will be shorter than the calculated life.

*4 The accuracy value is based on air as a fluid. For other fluids, it is a reference value.

*5 The value when connecting a product with a port size of 1/4 (PF3A8R5H), 3/8 (PF3A801H), 1/2 (PF3A802H), or 1 (PF3A804H, PF3A808H)

*6 In the low flow rate range, the temperature value fluctuates (rises). Refer to the "Temperature Accuracy" graph on page 28.

*7 Do not release the OUT side piping port of the product to the atmosphere without connecting piping. If the product is used with the piping port released to atmosphere, accuracy may vary.

*8 The value when the port size of the modular product is 1/4 (PF3A8R5H), 3/8 (PF3A801H), 1/2 (PF3A802H), or 1 (PF3A804H, PF3A808H) and the product is operated at a supply pressure of 0.5 MPa

*9 The time from when the measured value reaches the set value to when the switch output operates can be set.

*10 If the measured value fluctuates around the set value, the width for setting more than the fluctuating width needs to be set. Otherwise, chattering will occur.

*11 The flow rate given in the specifications is the value under standard conditions.

*12 Setting is only possible for models with the units selection function.

*13 Display range will change according to the setting of the zero cut-off function.

*14 The time for the digital filter can be set to the sensor input. The response time indicates when the set value is 90% in relation to the step input.

* Products with tiny scratches, marks, or display color or brightness variations which do not affect the performance of the product are verified as conforming products.

PF3A8□H-L Series

Specifications

Communication Specifications (IO-Link mode)

IO-Link type	Device
IO-Link version	V 1.1
Communication speed	COM2 (38.4 kbps)
Configuration file	IODD file*1
Minimum cycle time	5.8 ms
Process data length	Input data:12 bytes, Output data: 0 bytes
On request data communication	Yes
Data storage function	Yes
Event function	Yes
Vendor ID	131 (0 x 0083)
Device ID*2	PF3A8R5H-L2□-□□□: 747 (0 x 02EB)
	PF3A801H-L2□-□□□: 562 (0 x 0232)
	PF3A802H-L2□-□□□: 563 (0 x 0233)
	PF3A804H-L2□-□□□: 748 (0 x 02EC)
	PF3A808H-L2□-□□□: 731 (0 x 02DB)

*1 The configuration file can be downloaded from the SMC website, <https://www.smcworld.com>

*2 The device ID differs according to each product type (output specification).

Flow Range

Model	Flow range					
	0 L/min	1000 L/min	3000 L/min	6000 L/min	12000 L/min	18000 L/min
PF3A7R5H(-L) PF3A8R5H-L	5 L/min 5 L/min 0 L/min	500 L/min 750 L/min 750 L/min				
PF3A701H(-L) PF3A801H-L	10 L/min 10 L/min 0 L/min	1000 L/min 1500 L/min 1500 L/min				
PF3A702H(-L) PF3A802H-L	20 L/min 20 L/min 0 L/min	2000 L/min 3000 L/min 3000 L/min				
PF3A703H(-L)	30 L/min 30 L/min 0 L/min	3000 L/min 4500 L/min 4500 L/min				
PF3A704H(-L) PF3A804H-L	40 L/min 40 L/min 0 L/min	4000 L/min 6000 L/min 6000 L/min				
PF3A706H(-L)	60 L/min 60 L/min 0 L/min	6000 L/min 9000 L/min 9000 L/min				
PF3A708H(-L) PF3A808H-L	80 L/min 80 L/min 0 L/min	8000 L/min 12000 L/min 12000 L/min				
PF3A712H(-L)	120 L/min 120 L/min 0 L/min	12000 L/min 18000 L/min 18000 L/min				

Rated flow range
 Set point range
 Display range

Analog Output

Flow/Analog Output

	0 L/min	A*2	B
Voltage output (1 to 5 V)*1	1 V	1.04 V	5 V
Current output*1	4 mA	4.16 mA	20 mA

	0 L/min	C*2	D
Voltage output (0 to 10 V)*1*3	0 V	0.1 V	10 V

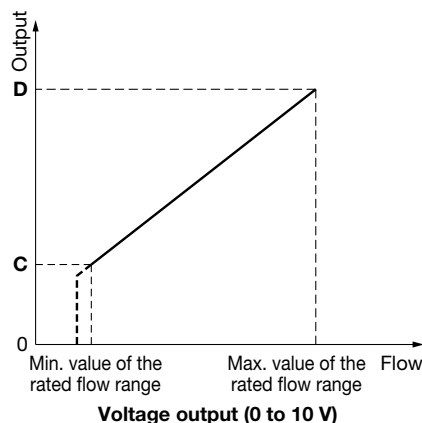
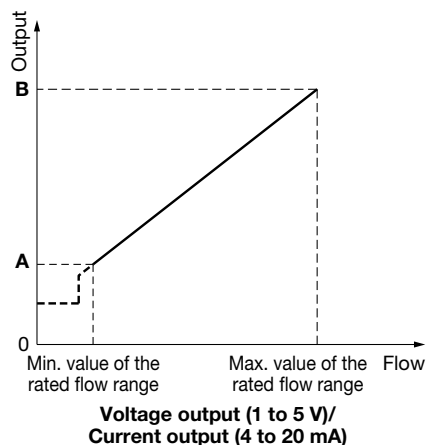
*1 Analog output accuracy is within $\pm 3\%$ F.S.

*2 A and C will change according to the setting of the zero cut-off function.

*3 The analog output current from the connected equipment should be 20 μ A or less when selecting 0 to 10 V. When more than 20 μ A current flows, it is possible that the accuracy is not satisfied below 0.5 V.

*4 The minimum value of the rated flow range will change according to the setting of the zero cut-off function.

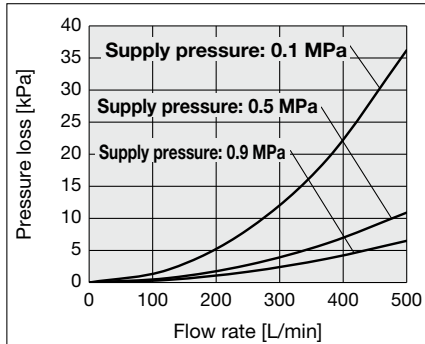
Model	Min. value of the rated flow range*4	Max. value of the rated flow range
PF3A7R5H(-L)	5 L/min	500 L/min
PF3A701H(-L)	10 L/min	1000 L/min
PF3A702H(-L)	20 L/min	2000 L/min
PF3A703H(-L)	30 L/min	3000 L/min
PF3A704H(-L)	40 L/min	4000 L/min
PF3A706H(-L)	60 L/min	6000 L/min
PF3A708H(-L)	80 L/min	8000 L/min
PF3A712H(-L)	120 L/min	12000 L/min



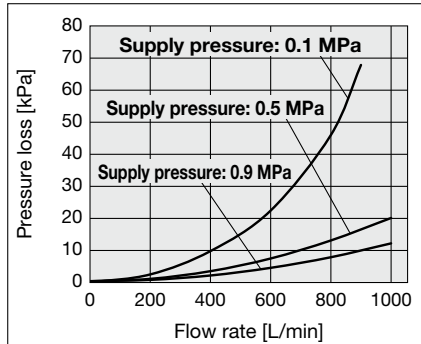
PF3A□H(-L) Series

Pressure Loss (Reference Data)

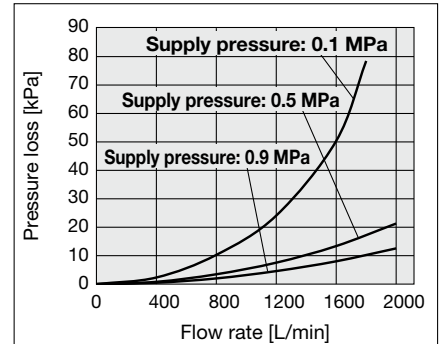
PF3A7R5H(-L) (for 500 L/min)
PF3A8R5H-L



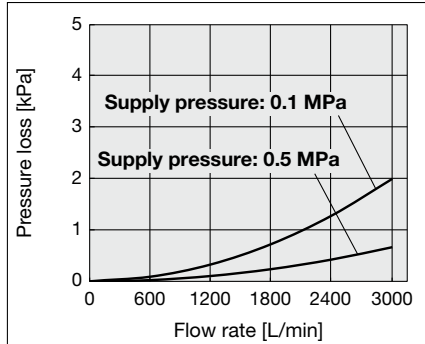
PF3A701H(-L) (for 1000 L/min)
PF3A801H-L



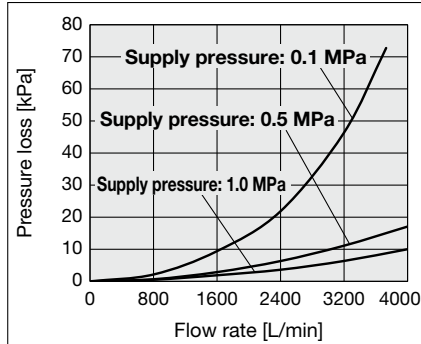
PF3A702H(-L) (for 2000 L/min)
PF3A802H-L



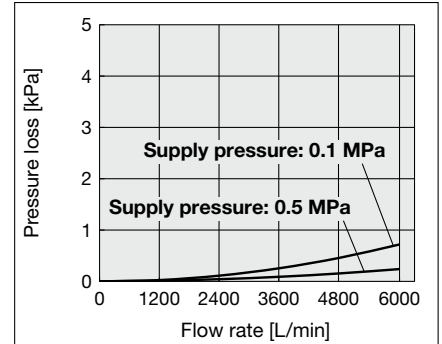
PF3A703H(-L) (for 3000 L/min)



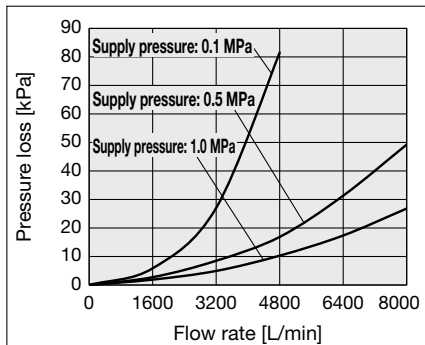
PF3A704H(-L) (for 4000 L/min)
PF3A804H-L



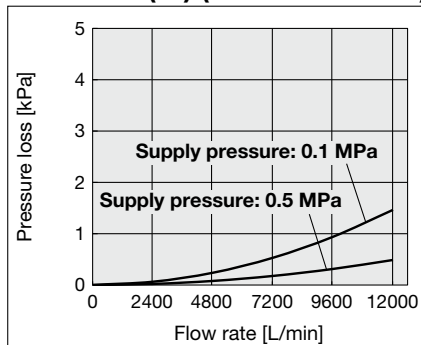
PF3A706H(-L) (for 6000 L/min)



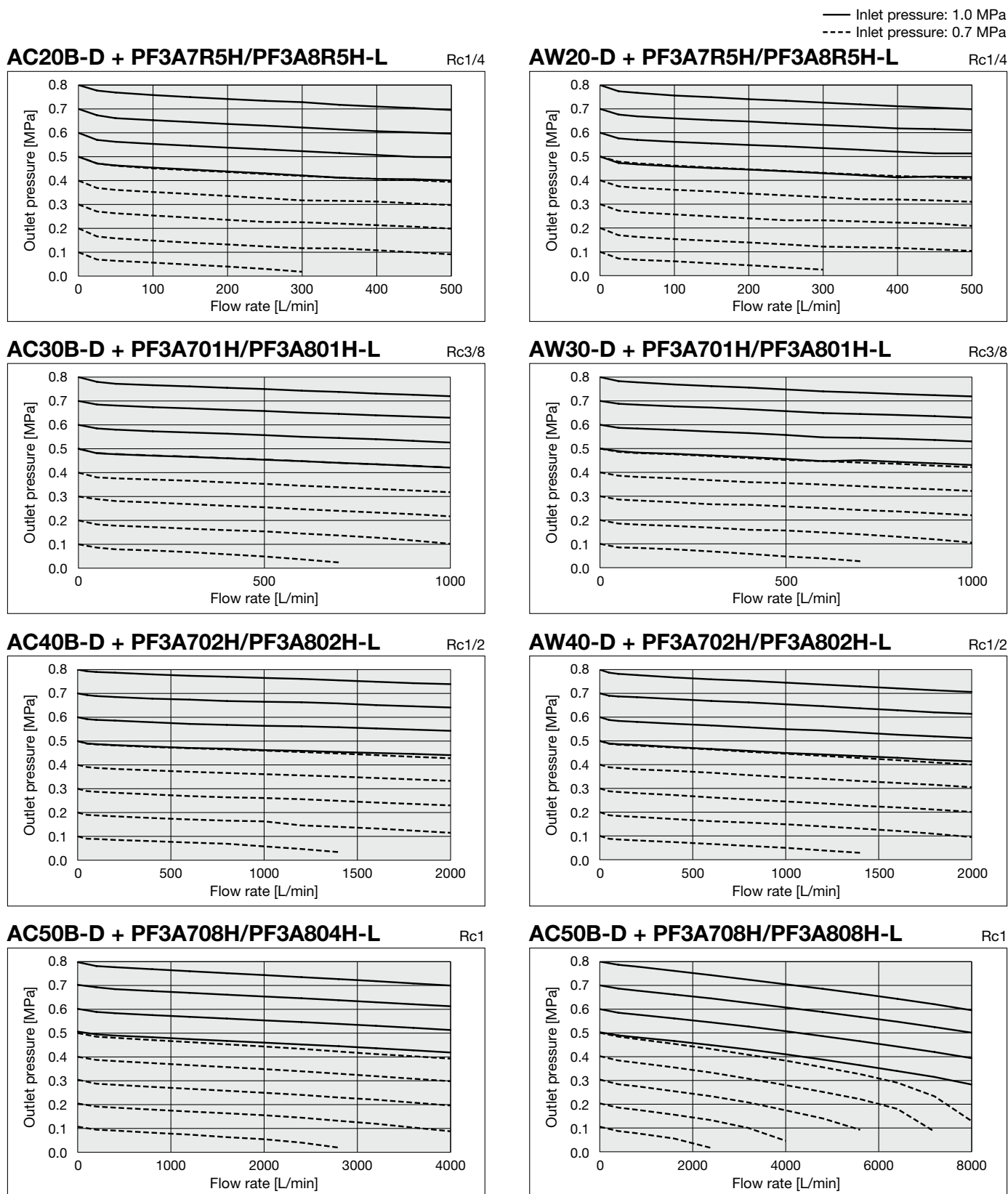
PF3A708H(-L) (for 8000 L/min)
PF3A808H-L



PF3A712H(-L) (for 12000 L/min)



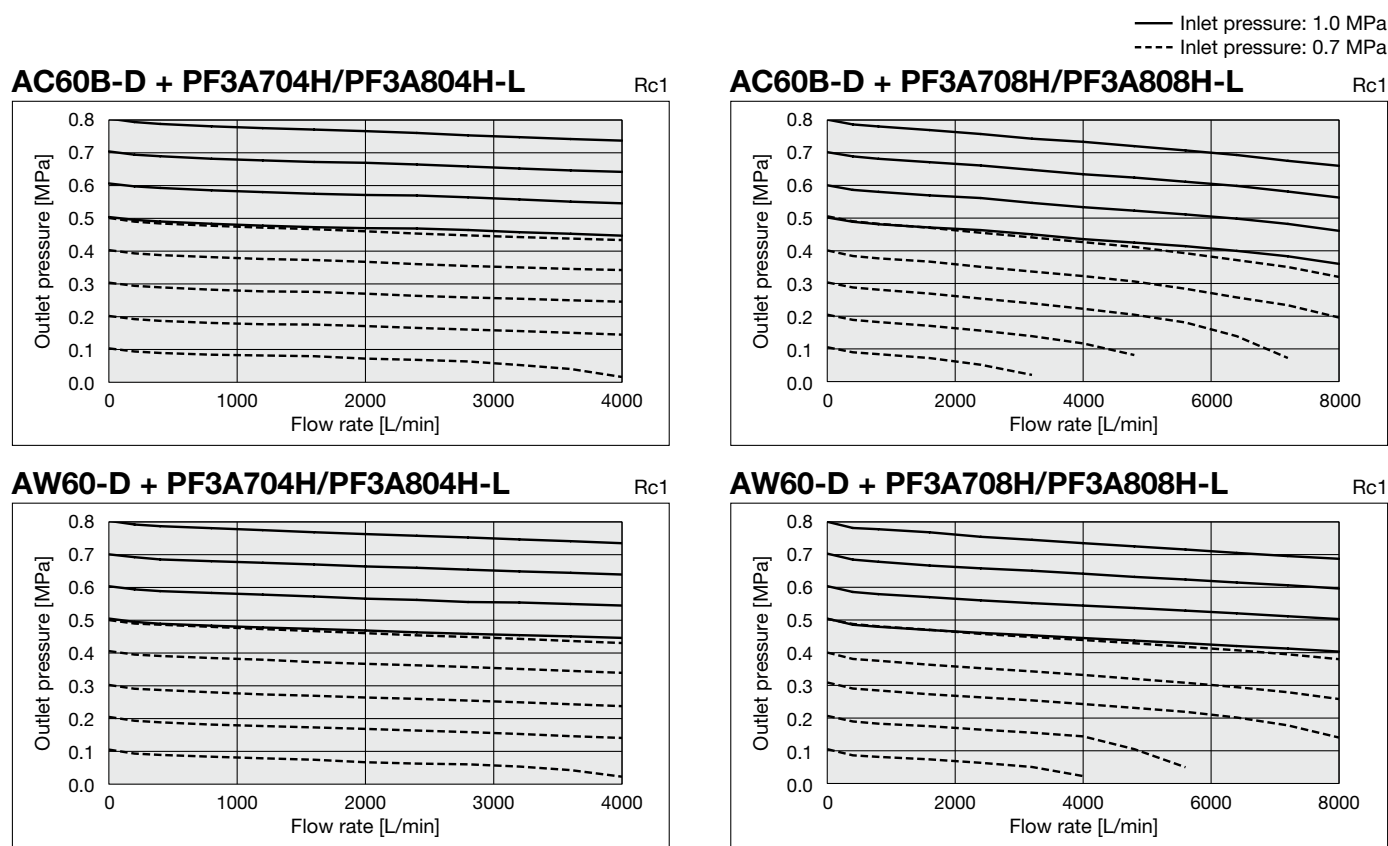
Flow Rate Characteristics (Reference Data)



* This product cannot be used for applications in which the flow exceeds the rated flow range. Use caution when selecting a product.

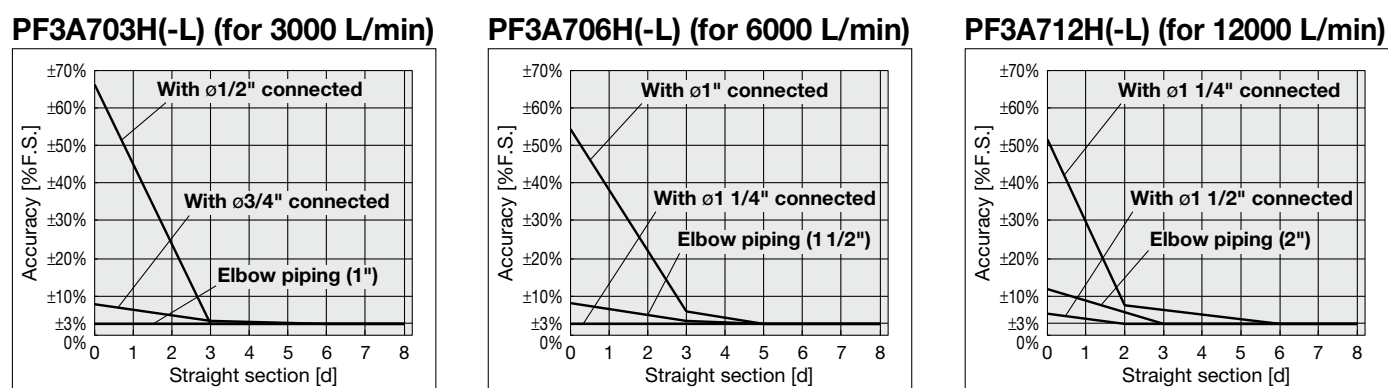
PF3A□H(-L) Series

Flow Rate Characteristics (Reference Data)

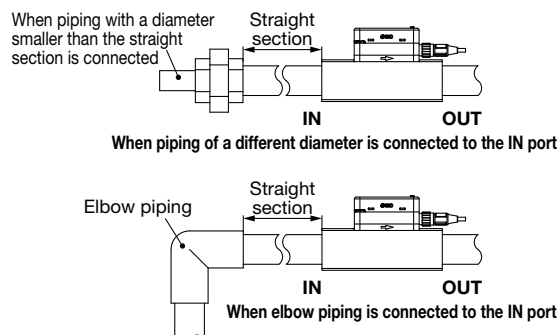


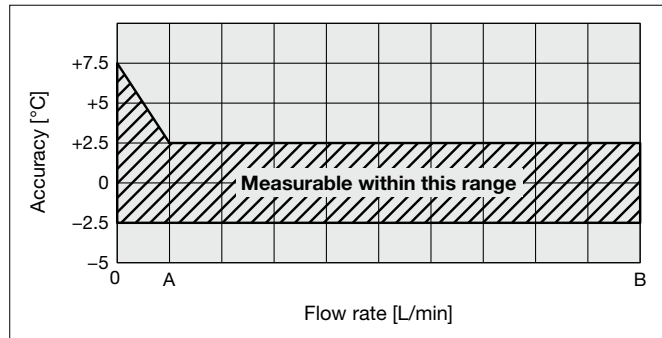
* This product cannot be used for applications in which the flow exceeds the rated flow range. Use caution when selecting a product.

IN Side Straight Section and Accuracy (Reference Data)



- Do not connect equipment or piping which may generate fluctuations in the flow or drift on the IN side of the product. When installing a regulator on the IN side of the product, make sure that chatter is not generated.
 - The piping on the IN side must have a straight section of piping whose length is more than 8 times the piping I.D.
- If a straight section of piping is not installed, the accuracy may vary by $\pm 3\%$ F.S. or more.
- * The "straight section" refers to a section of piping without any bends or rapid changes in the cross sectional area.



Temperature Accuracy (Reference Data)**PF3A801H/802H-L**

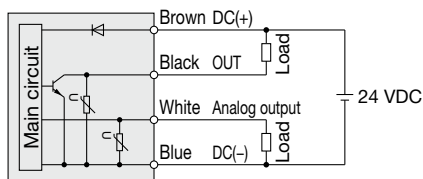
Model	A	B
PF3A8R5H-L	50 L/min	500 L/min
PF3A801H-L	100 L/min	1000 L/min
PF3A802H-L	200 L/min	2000 L/min
PF3A804H-L	400 L/min	4000 L/min
PF3A808H-L	800 L/min	8000 L/min

< Temperature Measurement >

When there is no (low) fluid flow, the heat of the platinum sensor heated for flow detection is transmitted to the temperature sensor, so the temperature measurement value in the low flow range (less than 10% of the rated flow rate) tends to increase in relation to the fluid temperature.

< Detection Principle (Flow) >

When a heated platinum sensor is installed in the branch passage, and fluid flows through it, the fluid removes heat from the platinum sensor. The resistance value of the platinum sensor decreases as it loses heat. As the resistance value decrease ratio has a uniform relationship to the fluid flow, the flow rate can be detected by measuring the resistance value.

Internal Circuits and Wiring Examples**NPN + Analog output selected****PF3A7□□H-□□-CS/DS□-□□**

Max. applied voltage: 28 V, Max. load current: 60 mA, Internal voltage drop: 1 V or less

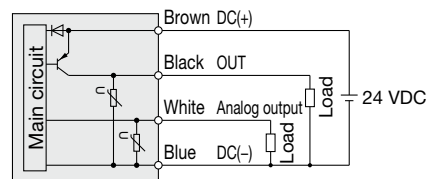
CS: Analog output: 1 to 5 V or 0 to 10 V

Output impedance: 1 k Ω

DS: Analog output: 4 to 20 mA

Max. load impedance: 600 Ω

Min. load impedance: 50 Ω

PNP + Analog output selected**PF3A7□□H-□□-ES/FS□-□□**

Max. load current: 60 mA, Internal voltage drop: 2 V or less

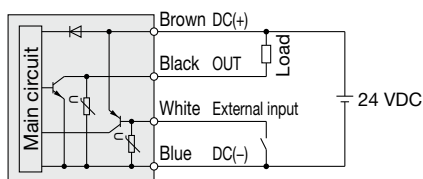
ES: Analog output: 1 to 5 V or 0 to 10 V

Output impedance: 1 k Ω

FS: Analog output: 4 to 20 mA

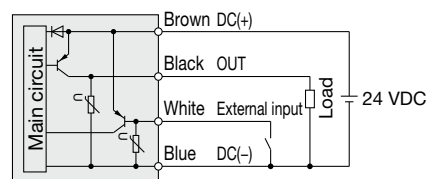
Max. load impedance: 600 Ω

Min. load impedance: 50 Ω

NPN + External input selected**PF3A7□□H-□□-CS/DS□-□□**

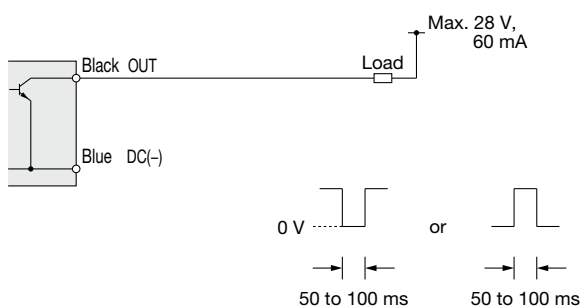
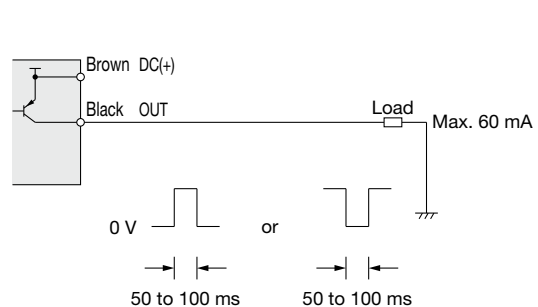
Max. applied voltage: 28 V, Max. load current: 60 mA, Internal voltage drop: 1 V or less

External input: Input voltage 0.4 V or less (Reed or Solid state input) for 30 ms or longer

PNP + External input selected**PF3A7□□H-□□-ES/FS□-□□**

Max. load current: 60 mA, Internal voltage drop: 2 V or less

External input: Input voltage 0.4 V or less (Reed or Solid state input) for 30 ms or longer

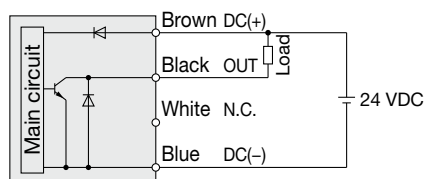
Accumulated pulse output wiring examples**PF3A7□□H-□□-CS/DS□-□□****PF3A7□□H-□□-ES/FS□-□□**

PF3A□H(-L) Series

Internal Circuits and Wiring Examples

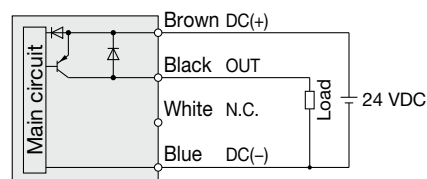
PF3A7□□H-□□-L□-□□

NPN output type



Max. applied voltage: 30 V, Max. load current: 60 mA, Internal voltage drop: 1.5 V or less

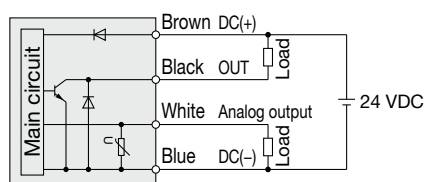
PNP output type



Max. load current: 60 mA, Internal voltage drop: 1.5 V or less

PF3A7□□H-□□-L3/L4□-□□

NPN + Analog output selected



Max. applied voltage: 30 V, Max. load current: 60 mA, Internal voltage drop: 1.5 V or less

L3: Analog output: 1 to 5 V or 0 to 10 V

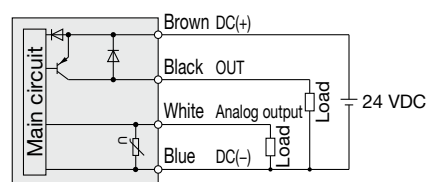
Output impedance: 1 k Ω

L4: Analog output: 4 to 20 mA

Max. load impedance: 600 Ω

Min. load impedance: 50 Ω

PNP + Analog output selected



Max. load current: 60 mA, Internal voltage drop: 1.5 V or less

L3: Analog output: 1 to 5 V or 0 to 10 V

Output impedance: 1 k Ω

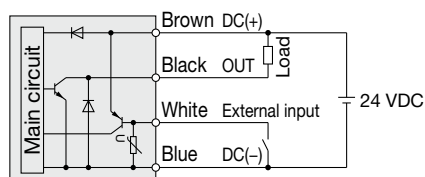
L4: Analog output: 4 to 20 mA

Max. load impedance: 600 Ω

Min. load impedance: 50 Ω

PF3A7□□H-□□-L3/L4□-□□

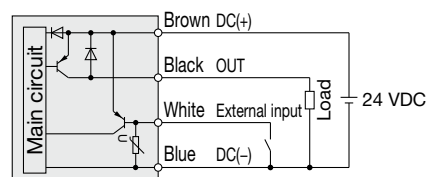
NPN + External input selected



Max. applied voltage: 30 V, Max. load current: 60 mA, Internal voltage drop: 1.5 V or less

External input voltage: 0.4 V or less (Reed or Solid state input) for 30 ms or longer

PNP + External input selected

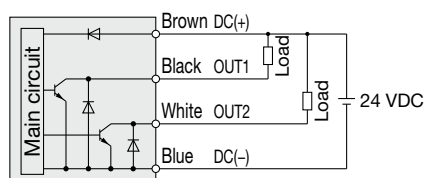


Max. load current: 60 mA, Internal voltage drop: 1.5 V or less

External input voltage: 0.4 V or less (Reed or Solid state input) for 30 ms or longer

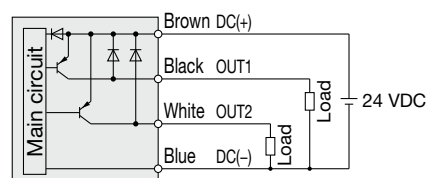
PF3A8□-L2□-□□

NPN 2 output type



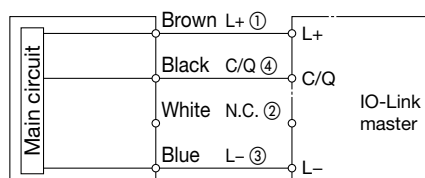
Max. applied voltage: 30 V, Max. load current: 60 mA, Internal voltage drop: 1.5 V or less

PNP 2 output type

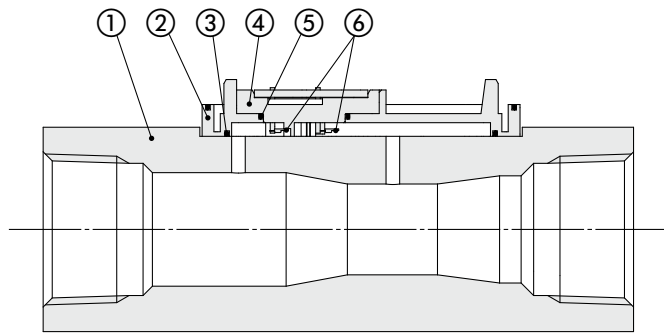


Max. load current: 60 mA, Internal voltage drop: 1.5 V or less

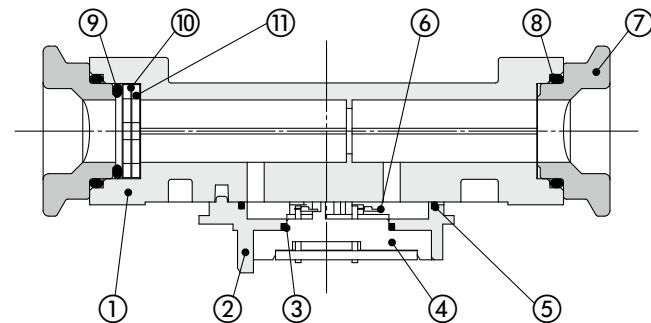
When used as an IO-Link device



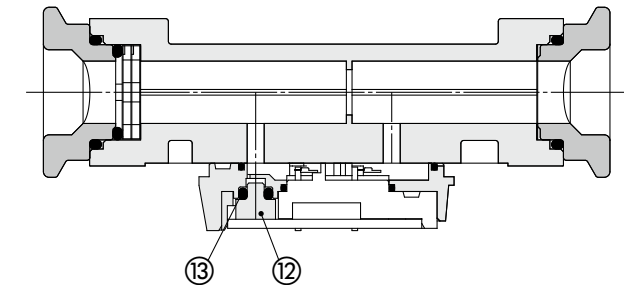
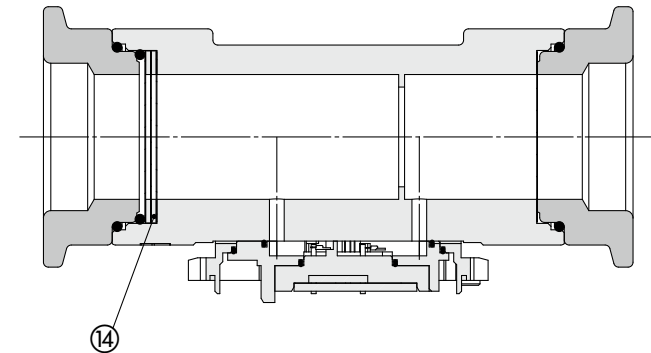
* The numbers in the diagram show the connector pin layout.

Construction: Parts in Contact with Fluid**PF3A703H(-L)/706H(-L)/712H(-L)****Component Parts**

No.	Description	Material	Note
1	Body	Aluminum alloy	Anodized
2	Branch passage	PPS	—
3	Gasket	HNBR	—
4	Sensor base	PPS	—
5	Gasket	HNBR	—
6	Sensor	Au, Pt, Al ₂ O ₃	—

PF3A7R5H(-L)/PF3A701H(-L)/702H(-L)**Component Parts**

No.	Description	Material	Note
1	Body	ADC	
2	Branch passage	PPS	
3	Gasket	HNBR	
4	Sensor base	PPS	
5	Gasket	HNBR	
6	Sensor	Au, Pt, Al ₂ O ₃	
7	Attachment	ADC	
8	O-ring	HNBR	
9	O-ring	HNBR	
10	Mesh	Stainless steel 304	
11	Spacer	PPS	
12	Pressure sensor	Silicon, PPS	
13	O-ring	HNBR	
14	Spacer	Stainless steel 304	

PF3A8R5H-L/PF3A801H-L/802H-L**PF3A704H(-L)/PF3A708H(-L)/PF3A804H-L/PF3A808H-L**

Body Ported Type PF3A□H(-L)

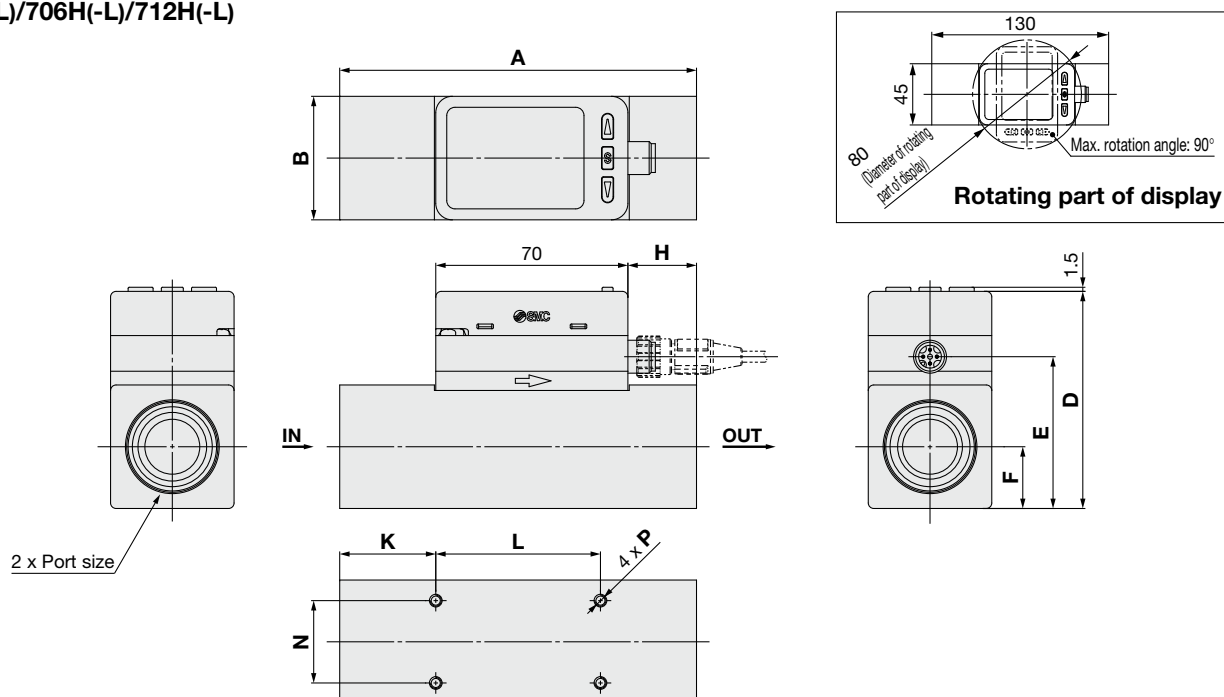
Modular Type PF3A□H(-L)

PFG300

PF3A□H(-L) Series

Dimensions: Body Ported Type

PF3A703H(-L)/706H(-L)/712H(-L)

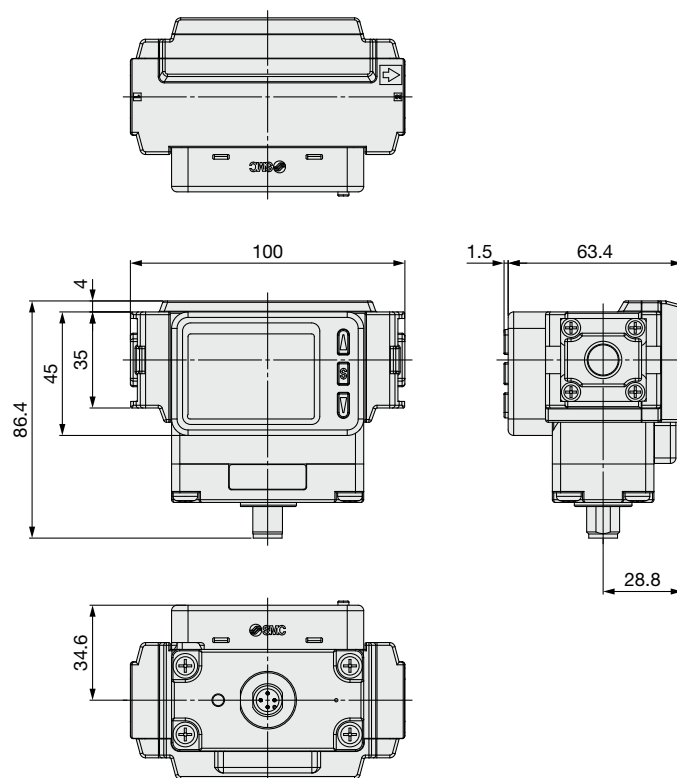


Model	Symbol	Port size	A	B	D	E	F	H	K	L	N	P
PF3A703H		Rc1, NPT1, G1	130	45	79.1	55.3	22.5	25	35	60	30	M4 x 0.7 depth 7
PF3A706H		Rc1 1/2, NPT1 1/2, G1 1/2	170	60	94.1	70.3	30	68	45	80	40	M5 x 0.8 depth 8
PF3A712H		Rc2, NPT2, G2	200	70	104.1	80.3	35	85	50	100	50	M6 x 1.0 depth 9

Dimensions: Modular Type

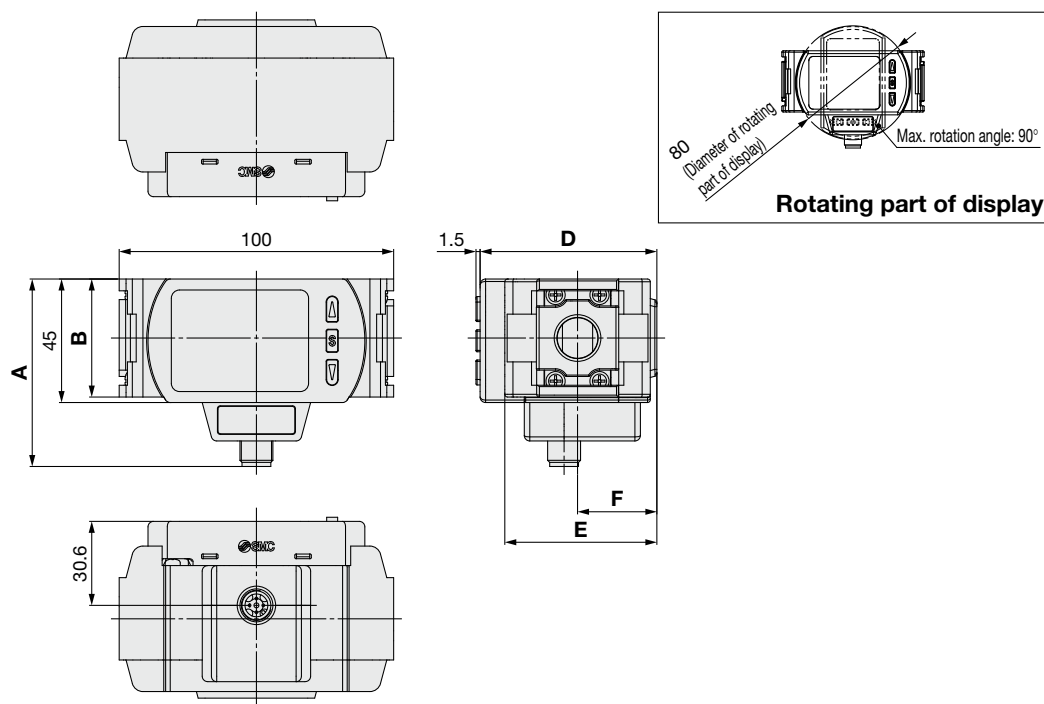
PF3A7R5H(-L)

PF3A8R5H(-L)



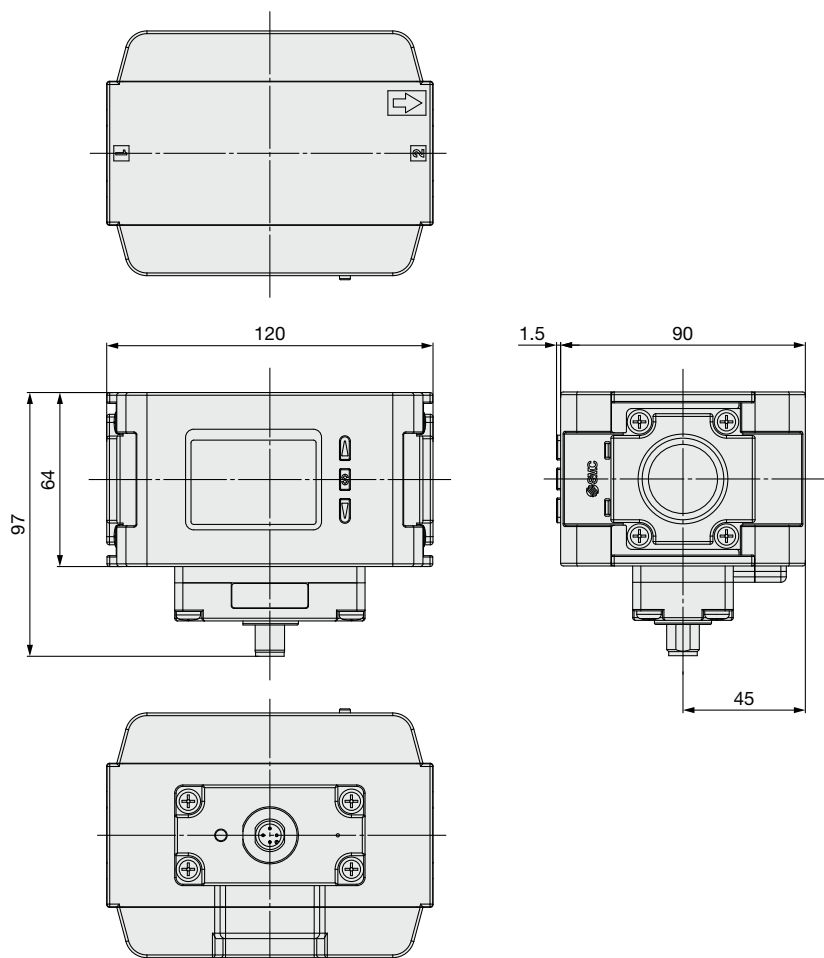
Dimensions: Modular Type

PF3A701H/702H(-L)
PF3A801H/802H(-L)



Model	Symbol	A	B	D	E	F
PF3A701H/PF3A801H		68.3	43	64.4	55.4	28.9
PF3A702H/PF3A802H		72.3	51	73	71	35.5

PF3A704H/708H(-L)
PF3A804H/808H(-L)



Body Ported Type PF3A□H(-L)

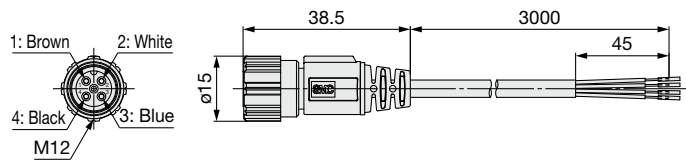
Modular Type PF3A□H(-L)

PFG300

PF3A□H(-L) Series

Dimensions

Lead wire with M12 connector (Part no.: ZS-37-A)



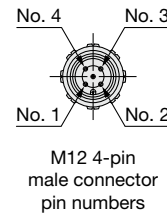
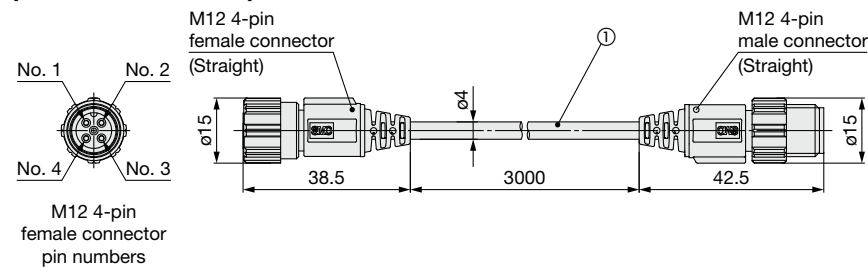
Pin no.	Pin name	Wire color
1	DC(+)	Brown
2	FUNC	White
3	DC(-)	Blue
4	OUT(C/Q)	Black

* 4-wire type lead wire with M12 connector used for the PF3A series

Cable Specifications

Conductor	Nominal cross section	AWG23
Insulator	Outside diameter	Approx. 1.1 mm
	Color	Brown, Blue, Black, White
Sheath	Finished outside diameter	ø4

Lead wire with M12-M12 connector (Part no.: ZS-49-A)



M12 (Female)	M12 (Male)
① L+	①
② N.C. or other	②
③ L-	③
④ C/Q	④

Wiring diagram

* For wiring, refer to the "Operation Manual" on the SMC website, <https://www.smcworld.com>

PF3A□H(-L) Series

Accessories

Unlike other options that can be provided with the shipped product, this option must be ordered separately.

Lead Wire with M12 Connector (Loose wires on 1 side)

EX500-AP 050 - S

Cable length (L)

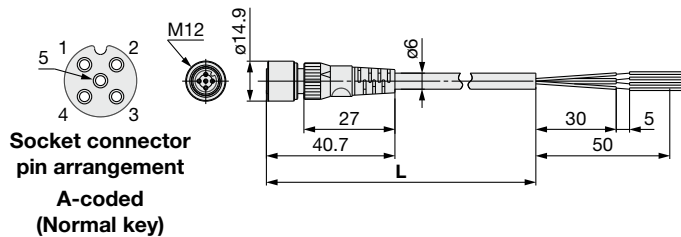
010	1000 mm
050	5000 mm

Connector specification

S	Straight
A	Angled

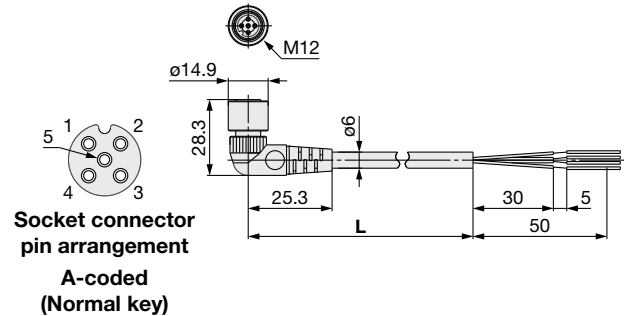


Straight connector type

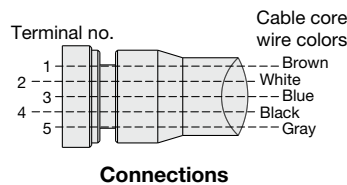


Item	Specifications
Cable O.D.	ø6 mm
Nominal cross section	0.3 mm²/AWG22
Wire diameter (Including insulator)	1.5 mm
Min. bending radius	40 mm (Fixed)

Angled connector type



Item	Specifications
Cable O.D.	ø6 mm
Nominal cross section	0.3 mm²/AWG22
Wire diameter (Including insulator)	1.5 mm
Min. bending radius	40 mm (Fixed)



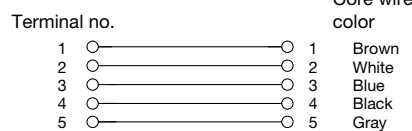
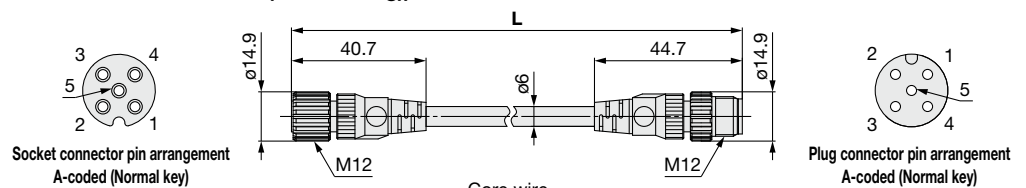
Connections

Lead Wire with M12 Connector (Connectors on Both Sides)

EX9-AC 005 -SSPS (With connectors on both sides (Socket/Plug))

Cable length (L)

005	500 mm
010	1000 mm
020	2000 mm
030	3000 mm
050	5000 mm
100	10000 mm



Connections

Item	Specifications
Cable O.D.	ø6 mm
Conductor nominal cross section	0.3 mm²/AWG22
Wire O.D. (Including conductor)	1.5 mm
Min. bending radius (Fixed)	40 mm

Body Ported Type PF3A□H(-L)

Modular Type PF3A□H(-L)

PFG300

Modular Type PF3A□H(-L) Series Optional Accessories



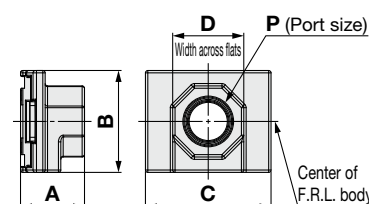
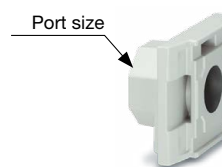
Piping Adapter: 1/8, 1/4, 3/8, 1/2, 3/4, 1, 1 1/4, 1 1/2

A piping adapter allows for the installation/removal of the component without removing the piping and thus makes maintenance easier.

E **300** - **03** - **D**

① ② ③

	Symbol	Description	① Body size [Applicable AC size]			
			200 [AC20]	300 [AC30]	400 [AC40]	600 [AC50, AC60]
② Pipe thread type	Nil	Rc	●	●	●	●
	N	NPT	●	●	●	●
	F	G	●	●	●	●
③ Port size	+	01	1/8	—	—	—
		02	1/4	●	●	—
		03	3/8	●	●	—
		04	1/2	—	●	—
		06	3/4	—	—	●
		10	1	—	—	●
		12	1 1/4	—	—	●
		14	1 1/2	—	—	●



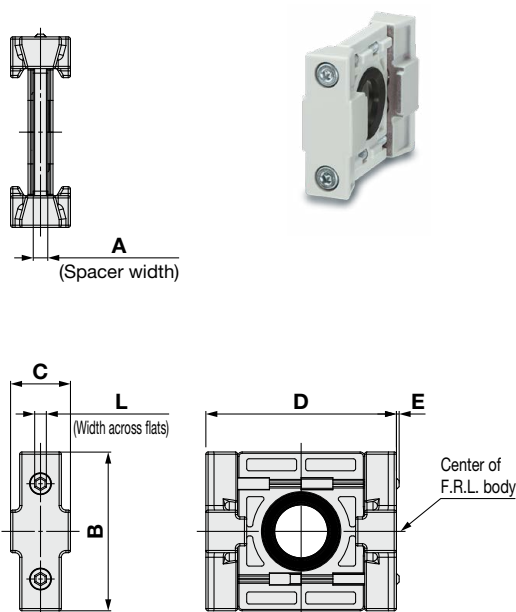
Model	P	A	B	C	D	Applicable AC size
E200-D	1/8, 1/4, 3/8	24	35	42	24	AC20-D
E300-D	1/4, 3/8, 1/2	27	43	53	30	AC30-D
E400-D	1/4, 3/8, 1/2, 3/4	30	51	71	36	AC40-D
E600-D	3/4, 1	39	64	90	46	AC50-D
	1 1/4, 1 1/2	42			63	AC60-D

Caution on Mounting

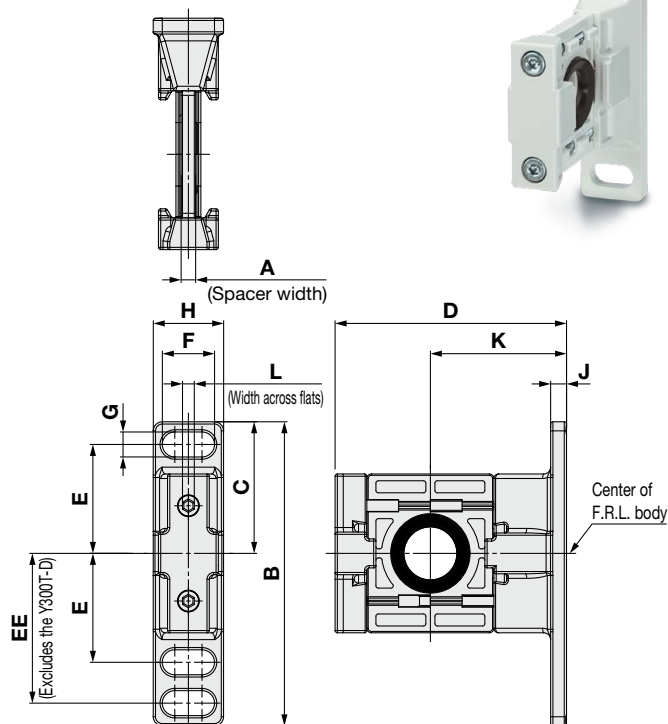
Pipe threads are not provided on the face which connects with the other components. For use, a separate spacer (or spacer with bracket) is required.

Spacer/Spacer with Bracket

Spacer



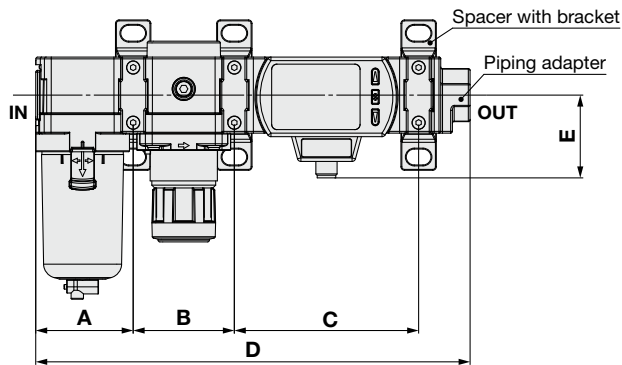
Spacer with bracket



Model	A	B	C	D	E	L	Applicable size
Y200-D	3.2	35	13.2	42	0.6	2	AC20-D
Y300-D	4.2	43	16.2	53	—	3	AC30-D
Y400-D	5.2	51	19.2	71	—	3	AC40-D
Y600-D	6.2	64	27.2	90	—	4	AC50-D AC60-D

Model	A	B	C	D	E	EE	F	G	H	J	K	L	Applicable size
Y200T-D	3.2	67	29	51	24	33	11.5	5.5	15.5	3.5	30	2	AC20-D
Y300T-D	4.2	85	42.5	67.5	35	—	14	7	20	6	41	3	AC30-D
Y400T-D	5.2	115	50	85.5	40	55	18	9	26	7	50	3	AC40-D
Y600T-D	6.2	140	60	115	50	70	20	11	31.2	8	70	4	AC50-D AC60-D

Mounting Position Example



Applicable air combination model	A	B	C	D	E
AC20-D	41.6	43.2	103.2	213.6	64.9
AC30-D	55.1	57.2	104.2	245.6	46.8
AC40-D	72.6	75.2	105.2	285.6	46.8
AC50-D	93.1	96.2	126.2	357.6	65
AC60-D	98.1	101.2	126.2	367.6	65

Body Ported Type PF3A□H(-L)

Modular Type PF3A□H(-L)

PFG300

3-Screen Display

Digital Flow Monitor

PFG300 Series



How to Order

PFG 3 0 0 - RT - M - L

3 Remote type monitor unit

Input specification

Symbol	Description	Applicable flow switch model
0	Voltage input	PF3A7□H-CS/ES/L3 series
1	Current input	PF3A7□H-DS/FS/L4 series

* The PFG3 (monitor unit) cannot be used as an IO-Link communication device.

Output specification

RT	2 outputs (NPN/PNP switching type) + Analog voltage output*1, 2
SV	2 outputs (NPN/PNP switching type) + Analog current output*2
XY	2 outputs (NPN/PNP switching type) + Copy function

*1 Can switch between 1 to 5 V and 0 to 10 V

*2 Can be switched to external input or copy function

Unit specification

Nil	Units selection function*3
M	SI units only*4

*3 This product is for overseas use only.
(The SI unit type is provided for use in Japan in accordance with the New Measurement Act.)

*4 Fixed units: Instantaneous flow: L/min
Accumulated flow: L

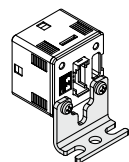
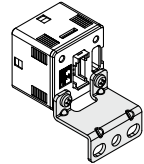
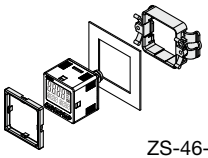
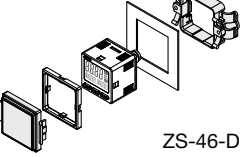
Option 4

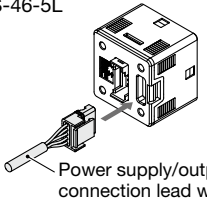
	Operation manual	Calibration certificate
Nil	○	—
Y	—	—
K	○	○
T	—	○

Option 3

Nil	None
C	ZS-28-CA-4 Sensor connector

Option 2

Symbol	Description
Nil	None
A1	Bracket A (Vertical mounting)  ZS-46-A1
A2	Bracket B (Horizontal mounting)  ZS-46-A2
B	Panel mount adapter  ZS-46-B
D	Panel mount adapter + Front protection cover  ZS-46-D

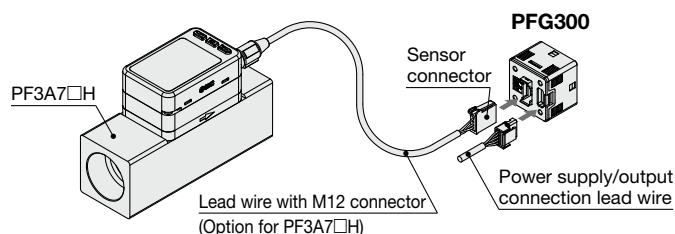
Symbol	Description
Nil	Without lead wire
L	Power supply/output connection lead wire (Lead wire length: 2 m)  ZS-46-5L

Options/Part Nos.

When only optional parts are required, order with the part numbers listed below.

Part no.	Option	Note
ZS-28-CA-4	Sensor connector	For PF3A7□H
ZS-46-A1	Bracket A	Tapping screw: Nominal size 3 x 8 L (2 pcs.)
ZS-46-A2	Bracket B	Tapping screw: Nominal size 3 x 8 L (2 pcs.)
ZS-46-B	Panel mount adapter	
ZS-46-D	Panel mount adapter + Front protection cover	
ZS-46-5L	Power supply/output connection lead wire	5-core, 2 m
ZS-27-01	Front protection cover	

Connection Example



For flow switch precautions and specific product precautions, refer to the "Operation Manual" on the SMC website.



Specifications

Model		PFG300 series					
Applicable SMC flow switch	Model	PF3A7R5H	PF3A701H	PF3A702H	PF3A703H	PF3A706H	PF3A712H
	Rated flow range*1	5 to 500 L/min	10 to 1000 L/min	20 to 2000 L/min	30 to 3000 L/min	60 to 6000 L/min	120 to 12000 L/min
Flow	Set point range	Instantaneous flow –25 to 525 L/min	–50 to 1050 L/min	–100 to 2100 L/min	–150 to 3150 L/min	–300 to 6300 L/min	–600 to 12600 L/min
	Smallest settable increment	Instantaneous flow 0 to 999,999,999,990 L	1 L/min	2 L/min	5 L/min	10 L/min	10 L/min
	Accumulated volume per pulse (Pulse width = 50 ms)	1 L/pulse	10 L/pulse	10 L/pulse	100 L/pulse	100 L/pulse	100 L/pulse
	Accumulated value hold function*3	Intervals of 2 or 5 minutes can be selected. The stored accumulated flow is held even when the power supply is OFF.					
Electrical	Power supply voltage	12 to 24 VDC ±10% (24 VDC when the PF3A7□H is connected)					
	Current consumption	25 mA or less					
Accuracy	Protection	Polarity protection					
	Display accuracy	±0.5% F.S. ± Minimum display unit (Ambient temperature of 25°C)					
	Analog output accuracy	±0.5% F.S. (Ambient temperature of 25°C)					
	Repeatability	±0.1% F.S. ± Minimum display unit					
Switch output	Temperature characteristics	±0.5% F.S. (Ambient temperature: 0 to 50°C, 25°C standard)					
	Output type	Select from NPN or PNP open collector output.					
	Output mode	Select from Hysteresis, Window comparator, Accumulated output, Accumulated pulse output, Error output, or Switch output OFF modes.					
	Switch operation	Select from Normal or Reversed output.					
	Max. load current	80 mA					
	Max. applied voltage (NPN only)	30 VDC					
	Internal voltage drop (Residual voltage)	NPN output: 1 V or less (at load current of 80 mA), PNP output: 1.5 V or less (at load current of 80 mA)					
	Response time*2	3 ms or less					
	Delay time*2	Select from 0.00, 0.05 to 0.1 s (increment of 0.01 s), 0.1 to 1.0 s (increment of 0.1 s), 1 to 10 s (increment of 1 s), 20 s, 30 s, 40 s, 50 s, or 60 s.					
	Hysteresis*4	Variable from 0					
Analog output*5	Protection	Short circuit protection					
	Output type	Voltage output: 1 to 5 V, 0 to 10 V (only when the power supply voltage is 24 VDC) Current output: 4 to 20 mA (0 L/min to maximum value of the rated flow)					
	Impedance	Output impedance: 1 kΩ					
	Response time*2	Maximum load impedance: 300 Ω (at power supply voltage of 12 V), 600 Ω (at power supply voltage of 24 VDC) 50 ms or less					
External input*6	External input	Input voltage: 0.4 V or less (Reed or Solid state) for 30 ms or longer					
	Input mode	Select from Accumulated value external reset or Peak/Bottom value reset.					
Sensor input	Input type	Voltage input: 1 to 5 VDC (Input impedance: 1 MΩ), Current input: 4 to 20 mA DC (Input impedance: 51 Ω) (0 L/min to maximum value of the rated flow)					
	Connection method	Connector (e-CON)					
	Protection	Over voltage protection (Up to 26.4 VDC)					
Display	Display mode	Select from Instantaneous flow or Accumulated flow.					
	Unit*7	Instantaneous flow L/min, cfm (ft ³ /min)	L, ft ³ , L x 10 ⁶ , ft ³ x 10 ⁶				
	Display range	Instantaneous flow –25 to 525 L/min	–50 to 1050 L/min	–100 to 2100 L/min	–150 to 3150 L/min	–300 to 6300 L/min	–600 to 12600 L/min
	Minimum display unit	Instantaneous flow 0 to 999,999,999,990 L	1 L/min	2 L/min	5 L/min	10 L/min	10 L/min
	Display type	LCD					
	Number of displays	3-screen display (Main screen, Sub screen)					
	Display color	1) Main screen: Red/Green, 2) Sub screen: Orange					
	Number of display digits	1) Main screen: 5 digits (7 segments), 2) Sub screen: 9 digits (7 segments)					
	Indicator LED	LED ON when switch output is ON. OUT1/2: Orange					
	Digital filter*8	Select from 0.00, 0.05 to 0.1 s (increment of 0.01 s), 0.1 to 1.0 s (increment of 0.1 s), 1 to 10 s (increment of 1 s), 20 s, or 30 s.					
Environmental resistance	Enclosure	IP40					
	Withstand voltage	1000 VAC for 1 minute between terminals and housing					
	Insulation resistance	50 MΩ or more (500 VDC measured via megohmmeter) between terminals and housing					
	Operating temperature range	Operating: 0 to 50°C, Stored: –10 to 60°C (No condensation or freezing)					
Standards	Operating humidity range	Operating/Stored: 35 to 85% RH (No condensation or freezing)					
		CE/UKCA marking, UL (CSA)					
Weight	Body	25 g (Excluding the power supply/output connection lead wire)					
	Lead wire with connector	+39 g					

*1 Rated flow range of the applicable flow switch

*2 Value without digital filter (at 0.00 s)

*3 When using the accumulated value hold function, use the operating conditions to calculate the product life, and do not exceed it. The maximum access limit of the memory device is 1.5 million times. If the product is operated 24 hours per day, the product life will be as follows:

- 5 min interval: life is calculated as 5 min x 1.5 million = 7.5 million min = 14.3 years
- 2 min interval: life is calculated as 2 min x 1.5 million = 3 million min = 5.7 years

If the accumulated value external reset is repeatedly used, the product life will be shorter than the calculated life.

*4 If the flow fluctuates around the set value, the width for setting more than the fluctuating width needs to be set. Otherwise, chattering will occur.

*5 Setting is only possible for models with analog output.

*6 Setting is only possible for models with external input.

*7 Setting is only possible for models with the units selection function.

*8 The response time indicates when the set value is 90% in relation to the step input.

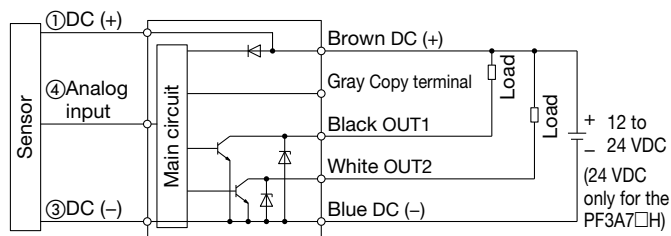
*9 The accumulated flow display is the upper 6-digit and lower 6-digit (total of 12 digits) display. When the upper digits are displayed, x 10⁶ lights up.

* Products with tiny scratches, marks, or display color or brightness variations which do not affect the performance of the product are verified as conforming products.

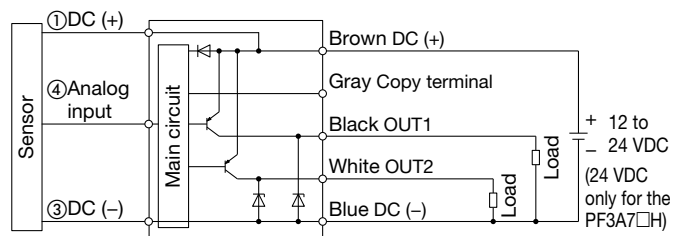
* For PF3A704H and PF3A708H, make a setting through input range selection.

Internal Circuits and Wiring Examples

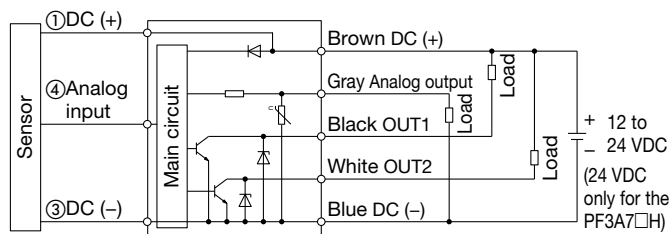
-XY
-RT
-SV
NPN (2 outputs) + Copy function



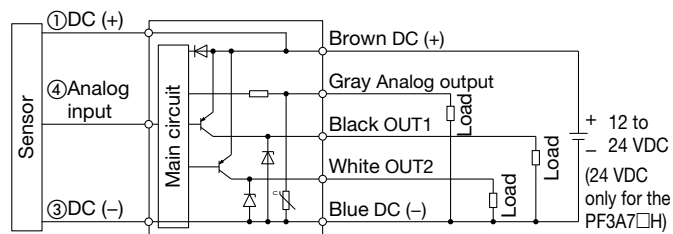
-XY
-RT
-SV
PNP (2 outputs) + Copy function



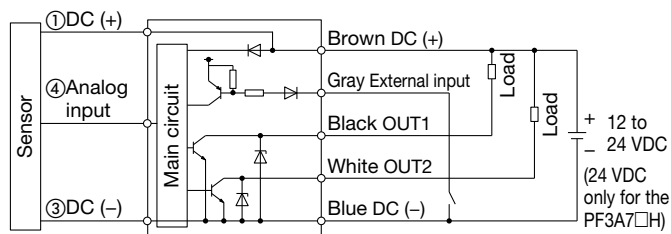
-RT: NPN (2 outputs) + Analog voltage output
-SV: NPN (2 outputs) + Analog current output



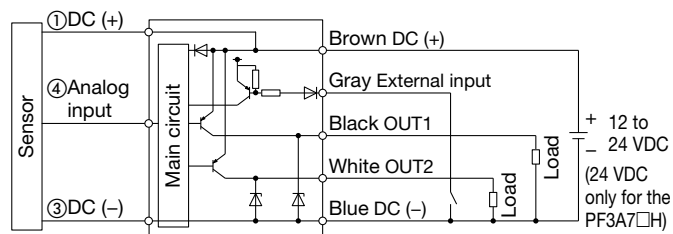
-RT: PNP (2 outputs) + Analog voltage output
-SV: PNP (2 outputs) + Analog current output



-RT: NPN (2 outputs) + External input
-SV: NPN (2 outputs) + External input

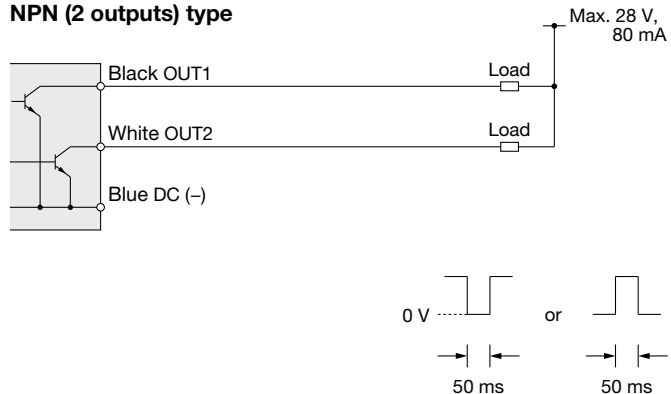


-RT: PNP (2 outputs) + External input
-SV: PNP (2 outputs) + External input

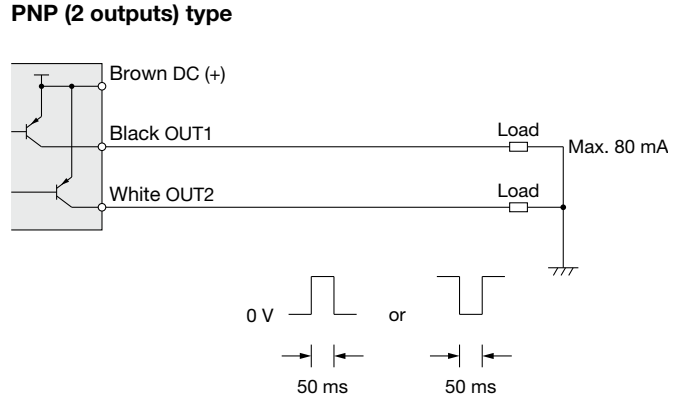


Accumulated pulse output wiring examples

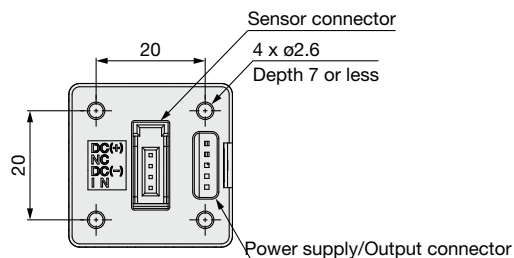
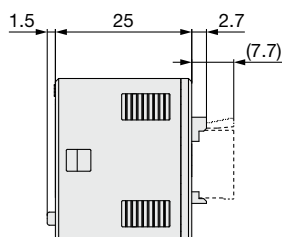
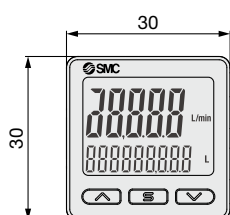
NPN (2 outputs) type



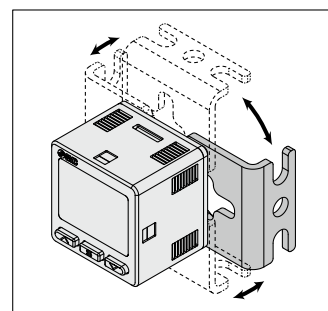
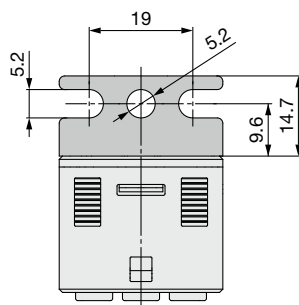
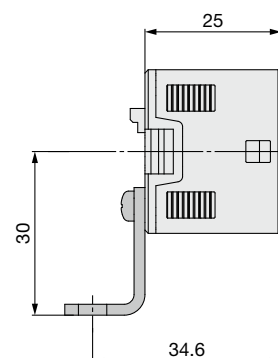
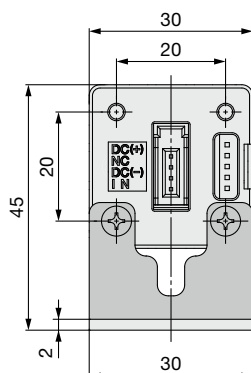
PNP (2 outputs) type



Dimensions

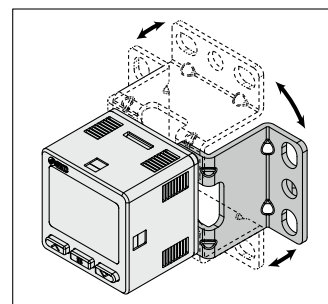
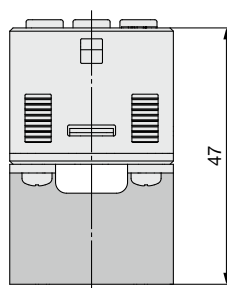


Bracket A (Part no.: ZS-46-A1)

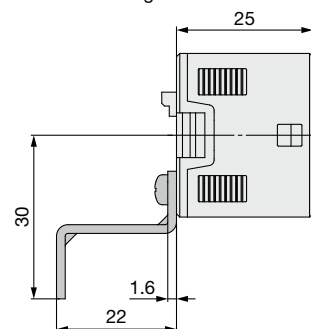
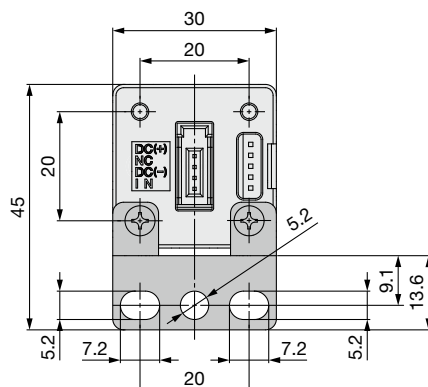


* Bracket configuration allows for mounting in four orientations.

Bracket B (Part no.: ZS-46-A2)



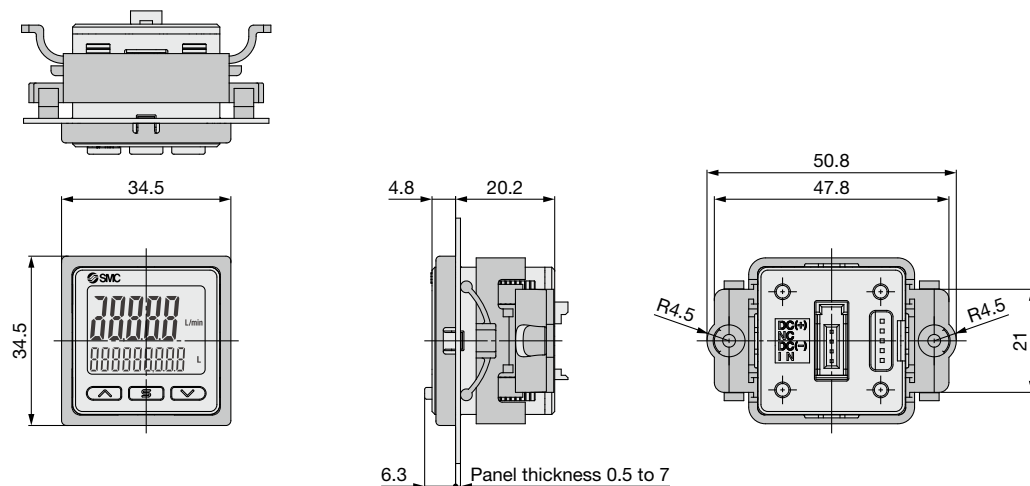
* Bracket configuration allows for mounting in four orientations.



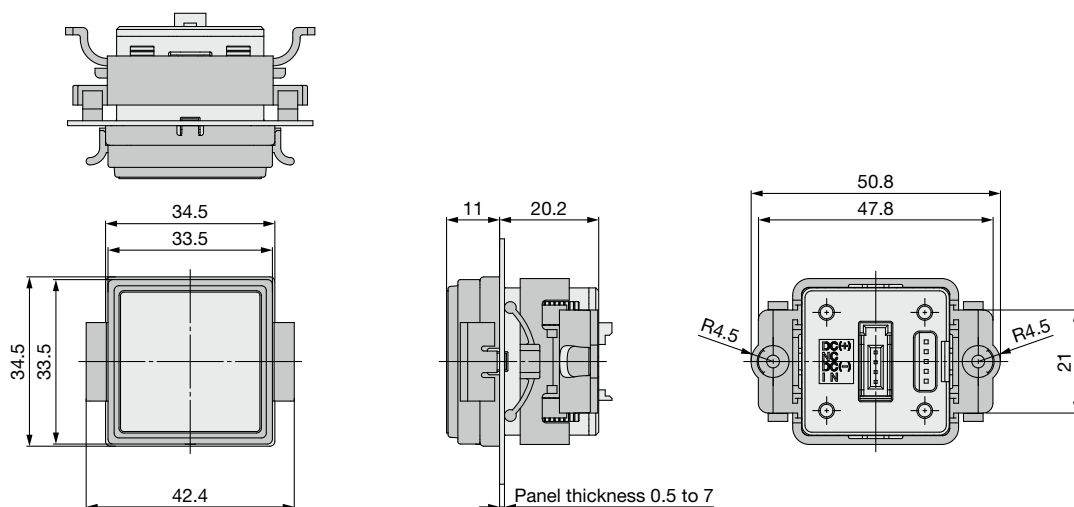
PFG300 Series

Dimensions

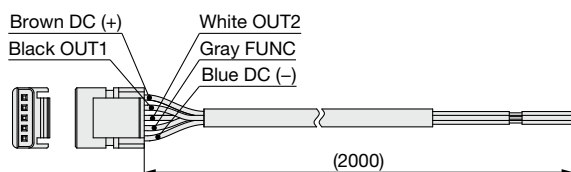
Panel mount adapter (Part no.: ZS-46-B)



Panel mount adapter + Front protection cover (Part no.: ZS-46-D)



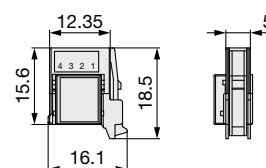
Power supply/output connection lead wire (Part no.: ZS-46-5L)



Sensor connector (Part no.: ZS-28-CA-4)

Pin no.	Terminal
1	DC (+)
2	N.C.
3	DC (-)
4	IN*1

*1 1 to 5 V or 4 to 20 mA



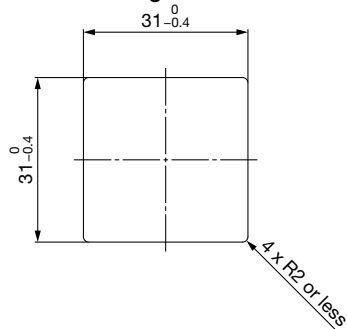
Cable Specifications

Conductor cross section		0.15 mm ² (AWG26)
Insulator	Outside diameter	1.0 mm
	Color	Brown, Blue, Black, White, Gray (5-core)
Sheath	Finished outside diameter	ø3.5

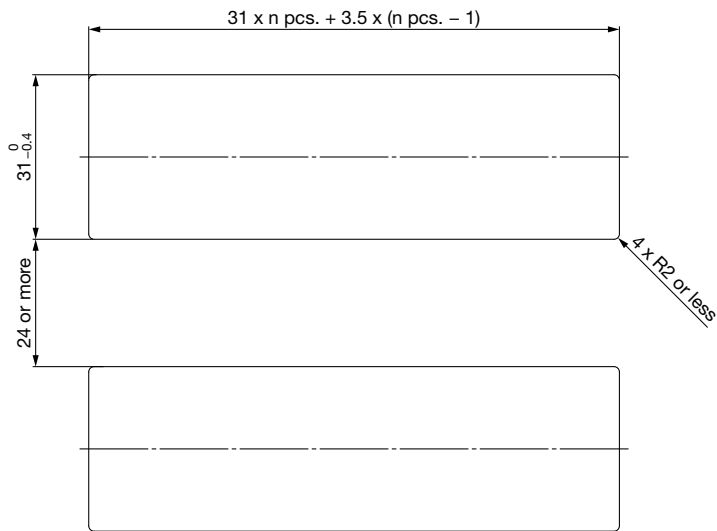
Dimensions

Panel fitting dimensions

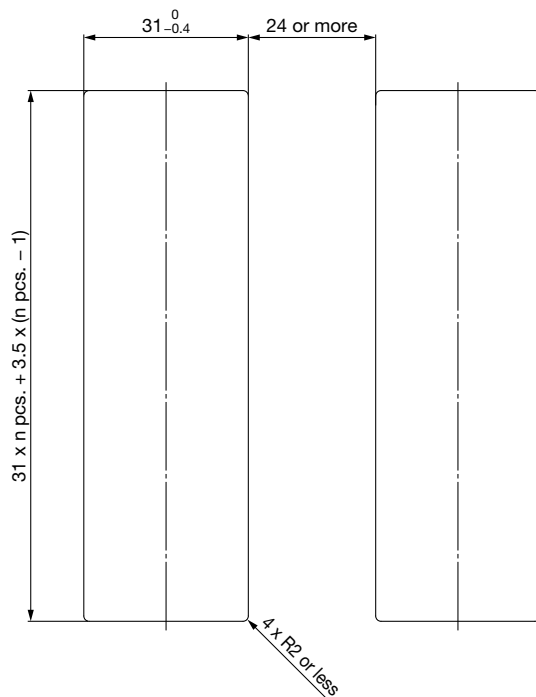
Individual mounting



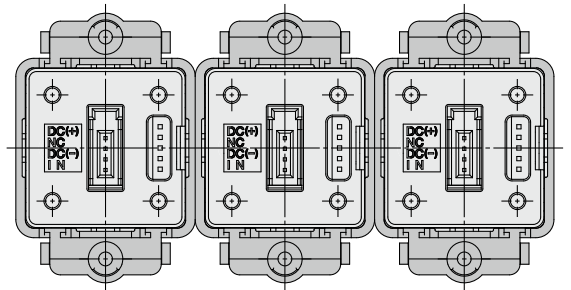
Multiple (2 pcs. or more) secure mounting <Horizontal>



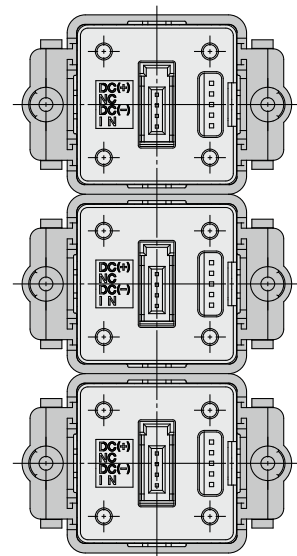
<Vertical>



Panel mount example <Horizontal>



Panel mount example <Vertical>



Body Ported Type **PF3A□H(-L)**

Modular Type **PF3A□H(-L)**

PFG300

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)*1), and other safety regulations.

⚠ Danger : **Danger** indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

⚠ Warning: **Warning** indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

⚠ Caution: **Caution** indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

*1) ISO 4414: Pneumatic fluid power - General rules and safety requirements for systems and their components
ISO 4413: Hydraulic fluid power - General rules and safety requirements for systems and their components
IEC 60204-1: Safety of machinery - Electrical equipment of machines - Part 1: General requirements
ISO 10218-1: Robots and robotic devices - Safety requirements for industrial robots - Part 1: Robots etc.

Warning

1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.

Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalog information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

2. Only personnel with appropriate training should operate machinery and equipment.

The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

3. Do not service or attempt to remove product and machinery/equipment until safety is confirmed.

1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

4. SMC products cannot be used beyond their specifications. They are not developed, designed, and manufactured to be used under the following conditions or environments. Use under such conditions or environments is not allowed.

1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
2. Use for nuclear power, railways, aviation, space equipment, ships, vehicles, military application, equipment affecting human life, body, and property, combustion equipment, entertainment equipment, emergency shut-off circuits, press clutches, brake circuits, safety equipment, etc., and use for applications that do not conform to standard specifications such as catalogs and operation manuals.
3. Use for interlock circuits, except for use with double interlock such as installing a mechanical protection function in case of failure. Please periodically inspect the product to confirm that the product is operating properly.

Caution

SMC develops, designs, and manufactures products to be used for automatic control equipment, and provides them for peaceful use in manufacturing industries.

Use in non-manufacturing industries is not allowed.

Products SMC manufactures and sells cannot be used for the purpose of transactions or certification specified in the Measurement Act of each country. The new Measurement Act prohibits use of any unit other than SI units in Japan.

Limited warranty and Disclaimer/ Compliance Requirements

The product used is subject to the following “Limited warranty and Disclaimer” and “Compliance Requirements”.

Read and accept them before using the product.

Limited warranty and Disclaimer

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first.*2)
Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided.
This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalog for the particular products.

*2) **Suction cups (Vacuum pads) are excluded from this 1 year warranty.**

A suction cup (vacuum pad) is a consumable part, so it is warranted for a year after it is delivered.

Also, even within the warranty period, the wear of a product due to the use of the suction cup (vacuum pad) or failure due to the deterioration of rubber material are not allowed by the limited warranty.

Compliance Requirements

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

Revision History

Edition B * The digital flow monitor PFG300 series has been added.
* Number of pages has been increased from 16 to 28.

Edition C * IO-Link compatible products (PF3A7mH-L) have been added.
* The modular type has been added.
* Number of pages has been increased from 28 to 40.

Edition D * The 4-screen display PF3A8 series has been added.
* Number of pages has been increased from 40 to 44.

Edition E * 500 L/4000 L/8000 L types have been added to the modular type.
* The display range has been expanded. (1.5 times the rated flow range)

Safety Instructions

Be sure to read the “Handling Precautions for SMC Products” (M-E03-3) and “Operation Manual” before use.