

3-Screen Display

Digital Flow Monitor

New



Can measure up to
12,000 l/min!

While checking the
measured value,

Main screen Measured value (Current flow value)

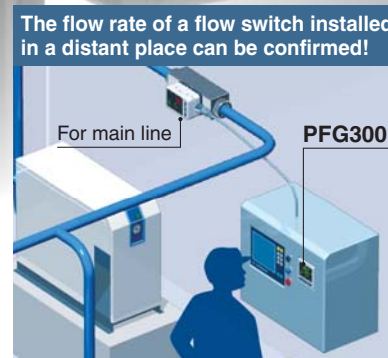
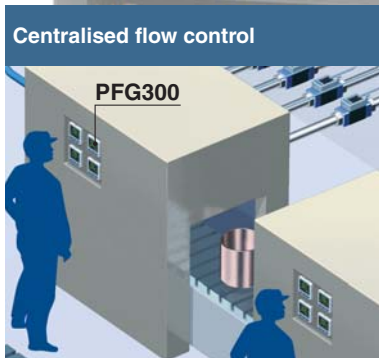
settings are possible.

Sub screen
Left side Label (Display item)
Right side Accumulated flow, Set value (Threshold value)




Visualisation of Settings

Accumulated flow	AC	Set value (Threshold value)	P.L
Hysteresis value	H.L	Bottom value	Lo
Peak value	H.L		

Current consumption
25 mA or less



Applicable Flow Switch Variations

Series	Smallest settable increment	Rated flow range [l/min]																									
		0.2	0.5	1	2	5	10	20	25	50	100	150	200	300	500	600	1000	2000	3000	6000	12000						
	2 l/min							30													3000						
	5 l/min							60														6000					
	10 l/min							120															12000				
	1 l/min		2											200													
			5											500													
			10											1000													
			20											2000													
	1 l/min		5											500													
			10											1000													
			20											2000													

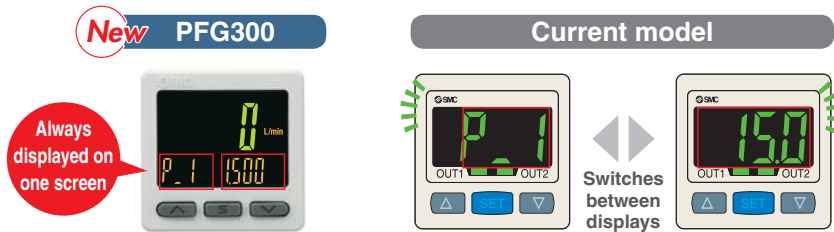
PFG300 Series



EMC-PFG300-01A-UK

Visualisation of Settings

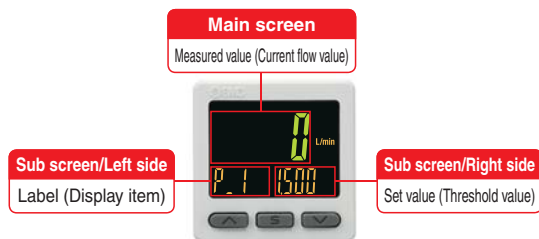
The sub screen (label) shows the item to be set.



Mode Examples	Hysteresis mode	Normal output	Set value (Threshold value)	Reverse output	Set value (Threshold value)	Hysteresis	Set hysteresis value
		P.1	1500	n.1	1500	H.1	150
Window comparator mode	Window comparator mode	Normal output/Lo side	Set value (Threshold value)	Normal output/Hi side	Set value (Threshold value)	Reverse output/Lo side	Set value (Threshold value)
		P.L	900	P.H	1800	n.L	900
						n.H	1800

Easy Screen Switching

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



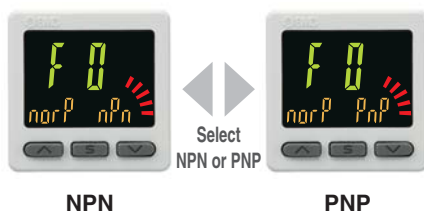
The sub screen can be switched by pressing the up/down buttons.



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

NPN/PNP Switch Function

The number of stock items can be reduced.



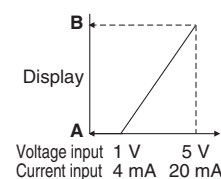
Analogue output of 0 to 10 V is also available.

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)

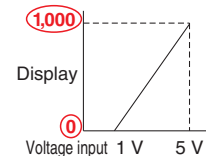
The displayed value to the sensor input can be set as required.
(Voltage input: 1 to 5 V/Current input: 4 to 20 mA)

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	1,000
PSE573	-100	100
PSE574	0	500

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

Functions

- Output operation
- Simple setting mode
- Display colour
- Delay time setting
- Digital filter setting
- FUNC output switching function
- Selectable analogue output

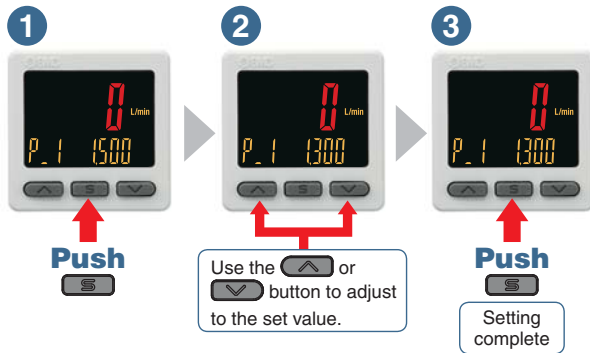
function

- External input function
- Forced output function
- Accumulated value hold
- Peak/Bottom value display
- Setting of security code
- Keylock function

- Reset to the default settings
- Display with zero cut-off setting
- Selection of display on sub screen
- Analogue output free range function
- Error display function
- Copy function
- Power-saving mode

Simple 3-Step Setting

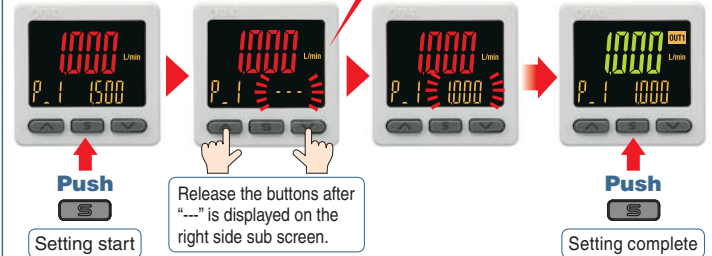
When the S button is pressed and the set value (P_1) is being displayed, the set value (threshold value) can be set. When the S button is pressed and the hysteresis (H_1) is being displayed, the hysteresis value can be set.



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.

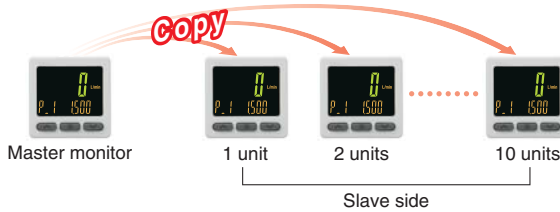
Snap shot function



Convenient Functions

● Copy function

The settings of the master monitor can be copied to the slave monitors.



● Secret code setting function

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

● Power-saving function

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

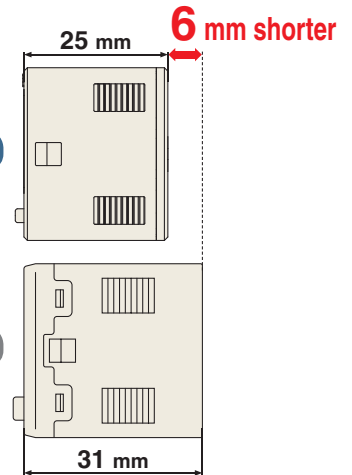
● External input function

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

Compact & Lightweight

● Compact: Max. 6 mm shorter

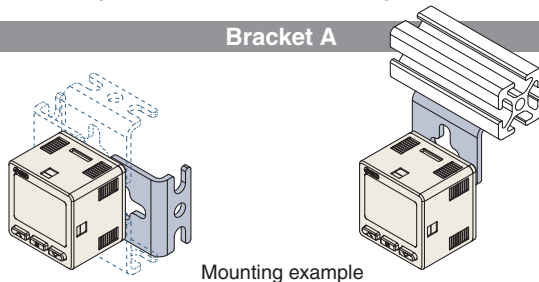
● Lightweight: Max. 5 g lighter (30 g → 25 g)



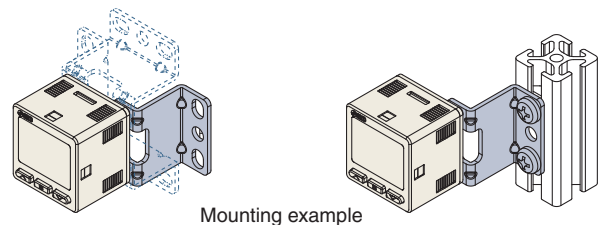
Mounting

Bracket configuration allows for mounting in four orientations.

Bracket A



Bracket B

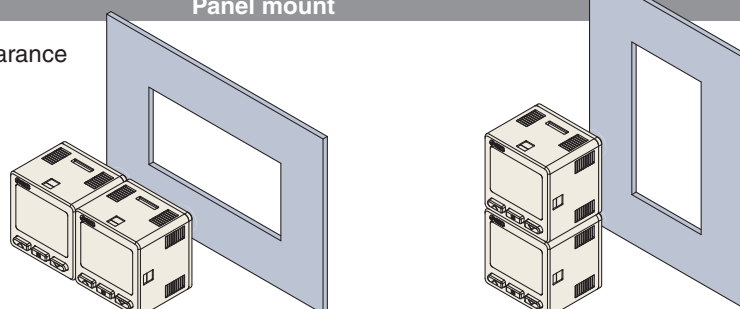


Panel mount

Mountable side by side without clearance

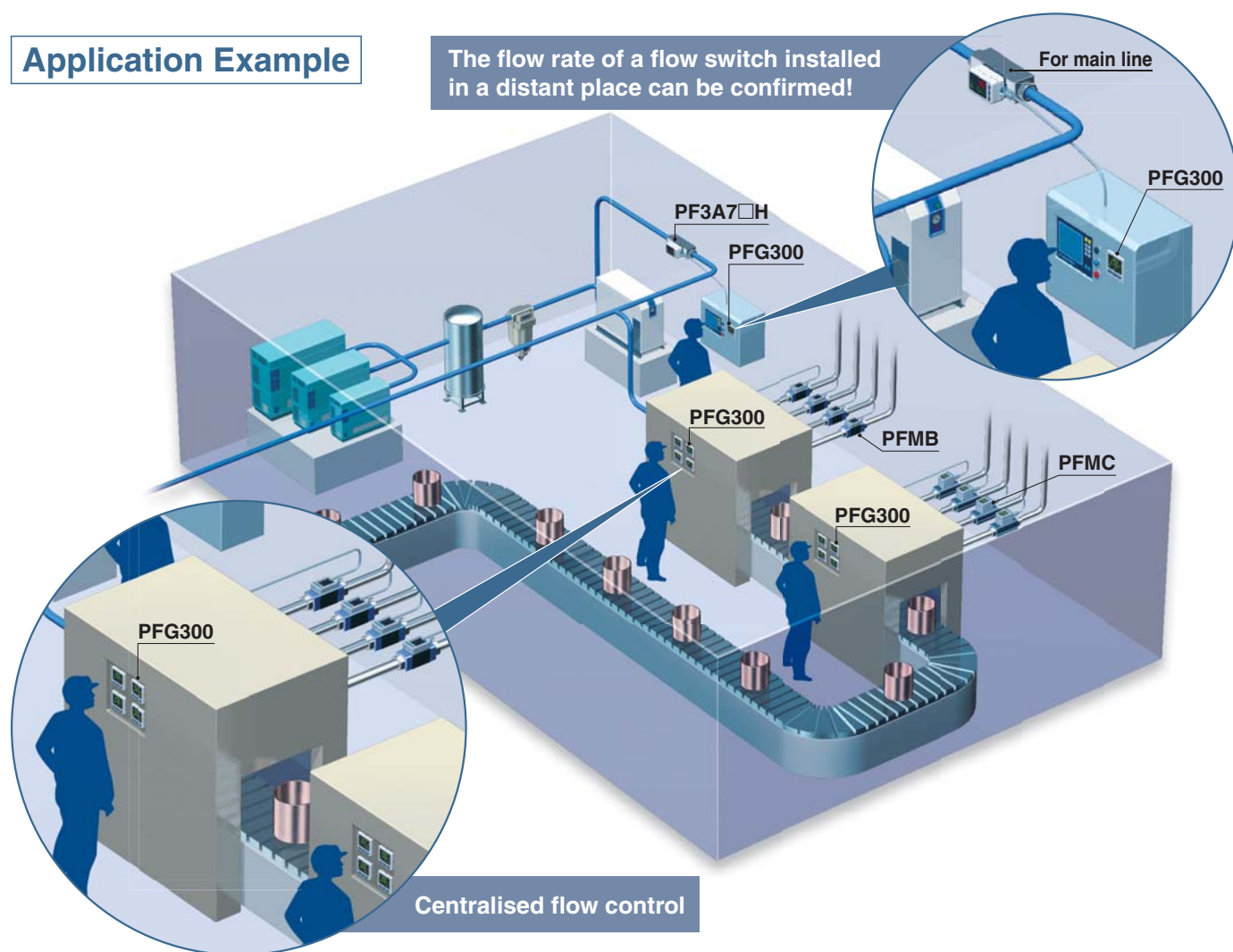
One opening!

- Reduced panel fitting labour
- Space saving







Application Example

The flow rate of a flow switch installed in a distant place can be confirmed!



Applicable Flow Switch Variations

Series	Enclosure	Applicable fluid	Rated flow range	Display
PFMB  	IP40	Dry air, N ₂	2 to 200 l/min	2-colour LED display
			5 to 500 l/min 10 to 1000 l/min 20 to 2000 l/min	2-colour LCD display
PFMC 	IP65	Dry air, N ₂	5 to 500 l/min 10 to 1000 l/min 20 to 2000 l/min	3-colour LCD display
PF3A7□H 	IP65	Air, N ₂	30 to 3000 l/min 60 to 6000 l/min 120 to 12000 l/min	3-colour LCD display

3-Screen Display

Digital Flow Monitor

PFG300 Series



RoHS



How to Order

PFG 3 0 0 - RT - M - L

Type

3	Remote type monitor unit
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Input specification

0	Voltage input
1	Current input

Output specification

RT	2 outputs (NPN/PNP switching type) + Analogue voltage output*1, 2
SV	2 outputs (NPN/PNP switching type) + Analogue 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

—	Units selection function
M	SI unit only*3

*3 Fixed unit: Instantaneous flow: l/min
Accumulated flow: L

Option 4

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

Option 3

	None
C	ZS-28-CA-4 Sensor connector
F	ZS-28-C-1 Sensor connector

Option 1

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

Options/Part Nos.

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

Part no.	Option	Note
ZS-28-C-1	Sensor connector	For PFMB
ZS-28-CA-4	Sensor connector	For PFMC, 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	

Option 2

Symbol	Description
—	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

PFG300 Series

Refer to the **Web Catalogue** for flow switch precautions. For details on the specific product precautions, refer to the "Operation Manual" on the SMC website.

Specifications

Model		PFG300 series	
Electrical	Power supply voltage	12 to 24 VDC $\pm 10\%$ Ripple	
	Current consumption	25 mA or less	
	Protection	Polarity protection	
Accuracy	Display accuracy	$\pm 0.5\%$ F.S. \pm Minimum display unit (Ambient temperature at 25 °C)	
	Analogue output accuracy	$\pm 0.5\%$ F.S. (Ambient temperature at 25 °C)	
	Repeatability	$\pm 0.1\%$ F.S. \pm Minimum display unit	
	Temperature characteristics	$\pm 0.5\%$ F.S. (Ambient temperature: 0 to 50 °C, 25 °C standard)	
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.	
	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	
	Protection	Short circuit protection	
Analogue output*5	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	Voltage output	Output impedance: 1 k Ω
		Current output	Maximum load impedance: 300 Ω (at power supply voltage of 12 V), 600 Ω (at power supply voltage of 24 VDC)
	Response time*2	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 M Ω), 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)
		Accumulated flow	L, ft ³ , L x 10 ⁶ , ft ³ x 10 ⁶
	Display type	LCD	
	Number of displays	3-screen display (Main screen, Sub screen)	
	Display colour	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	
Environment	Enclosure	IP40	
	Withstand voltage	1000 VAC for 1 min between terminals and housing	
	Insulation resistance	50 M Ω 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)	
	Operating humidity range	Operating/Stored: 35 to 85 % RH (No condensation or freezing)	
Standards		CE, RoHS	
Weight	Body	25 g (Excluding the power supply/output connection lead wire)	
	Lead wire with connector	+39 g	

Specifications with PFMB

	Model		PFG300 series			
Applicable SMC flow switch	Model		PFMB7201	PFMB7501	PFMB7102	PFMB7202
	Rated flow range*1		2 to 200 l/min	5 to 500 l/min	10 to 1000 l/min	20 to 2000 l/min
Flow	Set point range	Instantaneous flow	-10 to 210 l/min	-25 to 525 l/min	-50 to 1050 l/min	-100 to 2100 l/min
		Accumulated flow	0 to 999,999,999,999 L 0 to 999,999,999,990 L			
	Smallest settable increment	Instantaneous flow	1 l/min			
		Accumulated flow	1 L	10 L		
	Accumulated volume per pulse (Pulse width = 50 ms)		1 L/pulse		10 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.			
Display	Display range	Instantaneous flow	-10 to 210 l/min	-25 to 525 l/min	-50 to 1050 l/min	-100 to 2100 l/min
		Accumulated flow*9	0 to 999,999,999,999 L 0 to 999,999,999,990 L			
	Minimum display unit	Instantaneous flow	1 l/min			
		Accumulated flow	1 L	10 L		

Specifications with PFMC

Model		PFG300 series		
Applicable SMC flow switch	Model	PFMC7501	PFMC7102	PFMC7202
	Rated flow range* ¹	5 to 500 l/min	10 to 1000 l/min	20 to 2000 l/min
Flow	Set point range	Instantaneous flow	-25 to 525 l/min	
		Accumulated flow	-50 to 1050 l/min	
	Smallest settable increment	Instantaneous flow	0 to 999,999,999,990 L	
		Accumulated flow	1 l/min	
	Accumulated volume per pulse (Pulse width = 50 ms)	1 L/pulse		10 L/pulse
Display	Display range	Intervals of 2 or 5 minutes can be selected. The stored accumulated flow is held even when the power supply is OFF.		
		Instantaneous flow	-25 to 525 l/min	-50 to 1050 l/min
	Minimum display unit	Accumulated flow	0 to 999,999,999,990 L	
		Instantaneous flow	1 l/min	
		Accumulated flow	10 L	

Specifications with PF3A7□H

Model		PFG300 series		
Applicable SMC flow switch	Model	PF3A703H	PF3A706H	PF3A712H
	Rated flow range* ¹	30 to 3000 l/min	60 to 6000 l/min	120 to 12000 l/min
Flow	Set point range	Instantaneous flow	-150 to 3150 l/min	
		Accumulated flow	-300 to 6300 l/min	
	Smallest settable increment	Instantaneous flow	0 to 999,999,999,990 L	
		Accumulated flow	2 l/min	
	Accumulated volume per pulse (Pulse width = 50 ms)	10 L/pulse		100 L/pulse
Display	Display range	Intervals of 2 or 5 minutes can be selected. The stored accumulated flow is held even when the power supply is OFF.		
		Instantaneous flow	-150 to 3150 l/min	-300 to 6300 l/min
	Minimum display unit	Accumulated flow* ⁹	0 to 999,999,999,990 L	
		Instantaneous flow	0 to 999,999,999,900 L	
		Instantaneous flow	2 l/min	5 l/min
		Accumulated flow	10 L	100 L

*1 Rated flow range of the applicable flow switch

*2 Value without digital filter (at 0 ms)

*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, be sure to keep a sufficient margin. Otherwise, chattering will occur.

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

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

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

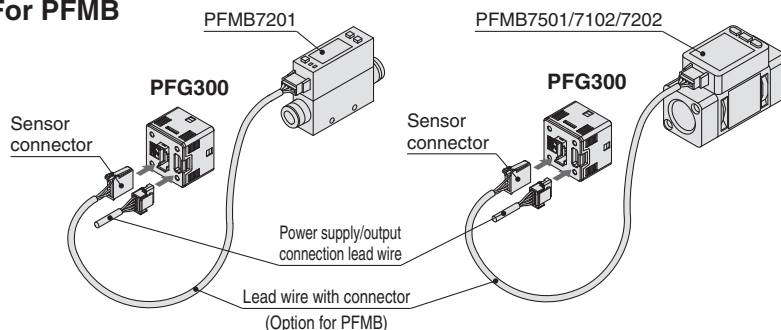
*8 The response time indicates when the set value is 90 % in relation to the step input.

*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 10⁸ lights up.

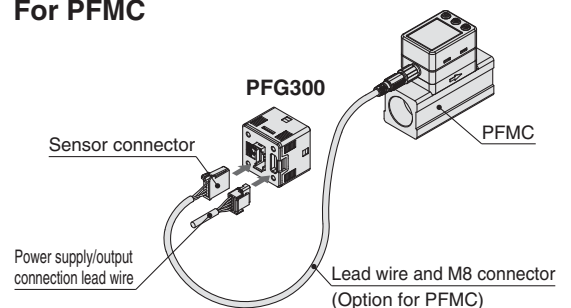
* Products with tiny scratches, smears, or display colour or brightness variations which do not affect the performance of the product are verified as conforming products.

Connection Example

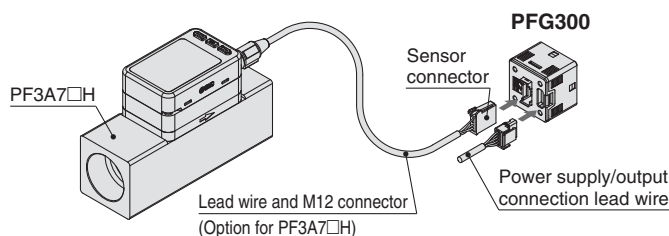
For PFMB



For PFMC

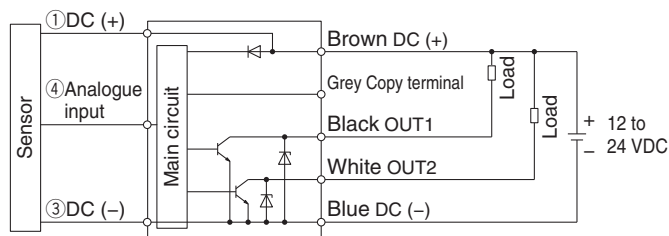


For PF3A7□H

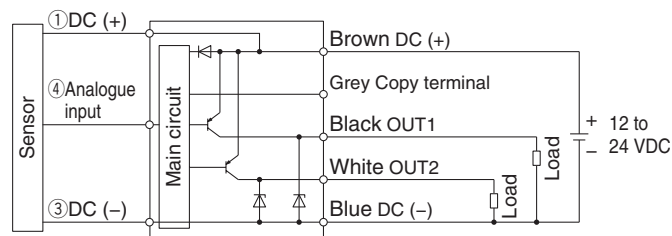


Internal Circuits and Wiring Examples

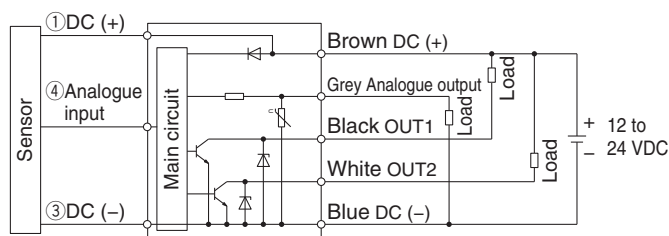
-XY
-RT
-SV
NPN (2 outputs) + Copy function



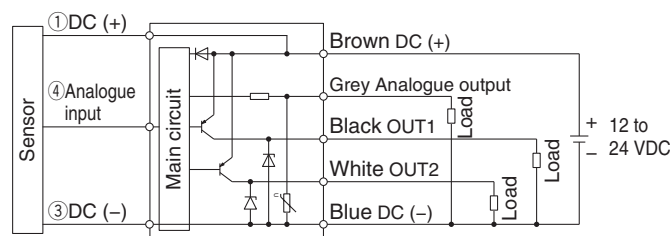
-XY
-RT
-SV
PNP (2 outputs) + Copy function



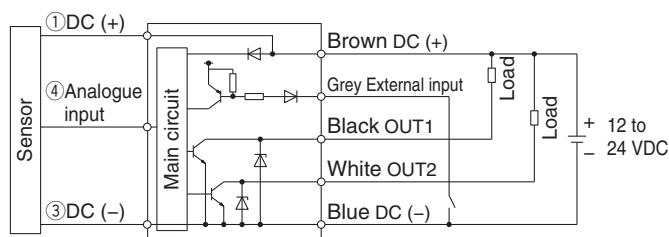
-RT: NPN (2 outputs) + Analogue voltage output
-SV: NPN (2 outputs) + Analogue current output



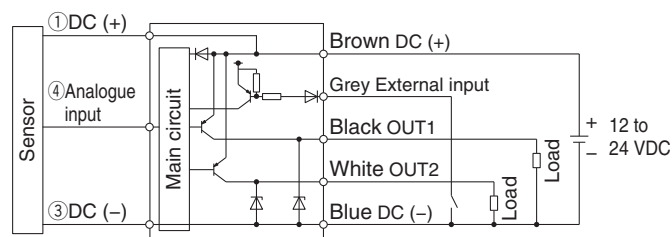
-RT: PNP (2 outputs) + Analogue voltage output
-SV: PNP (2 outputs) + Analogue current output



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

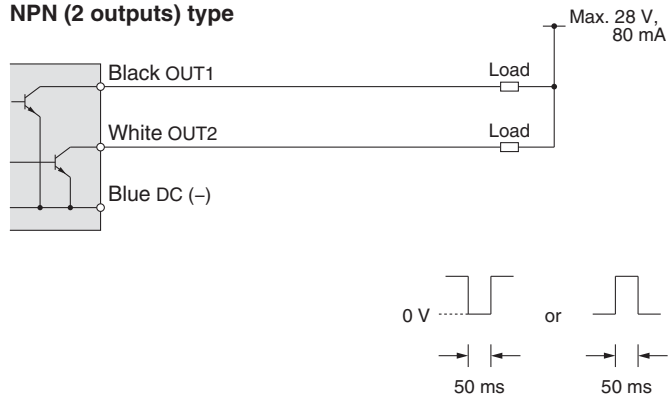


-RT: PNP (2 outputs) + External input
-SV: PNP (2 outputs) + External input

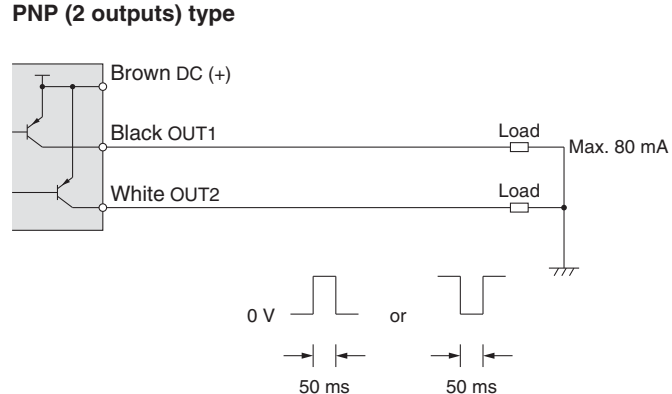


Accumulated pulse output wiring examples

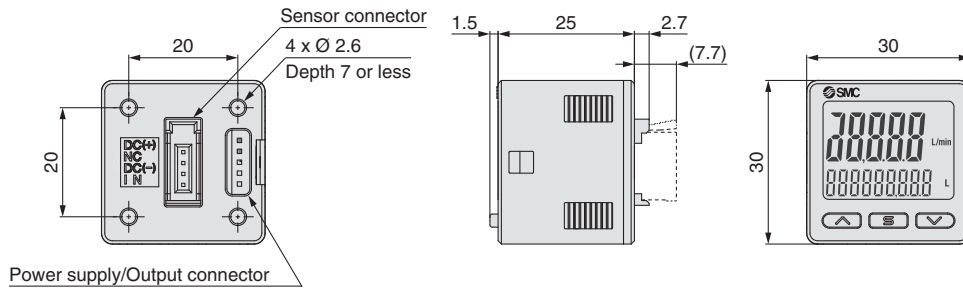
NPN (2 outputs) type



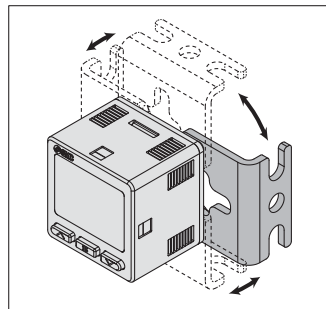
PNP (2 outputs) type



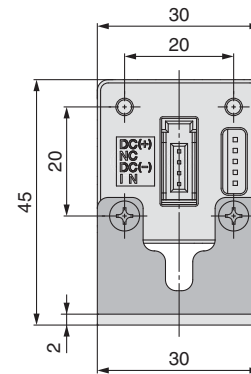
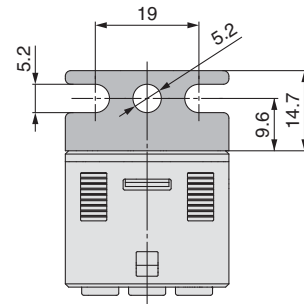
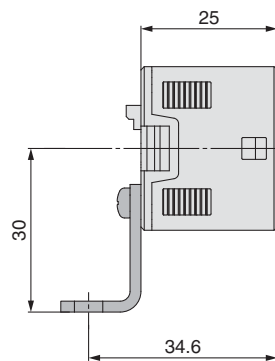
Dimensions



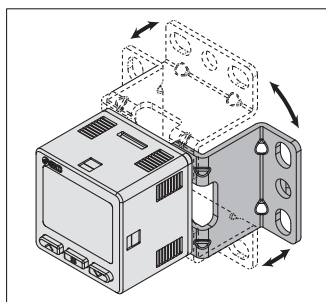
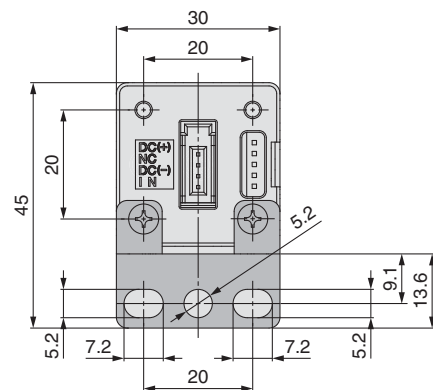
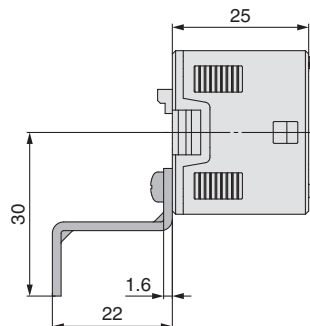
Bracket A (Part no.: ZS-46-A1)



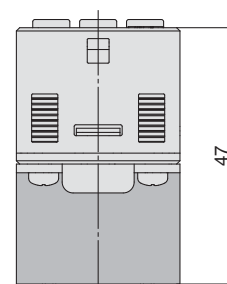
* Bracket configuration allows for mounting in four orientations.



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



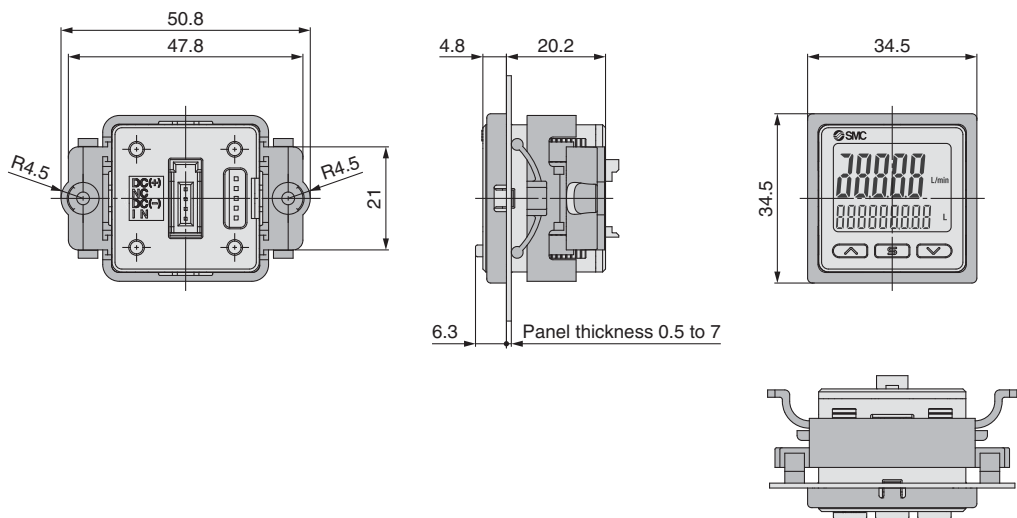
* Bracket configuration allows for mounting in four orientations.



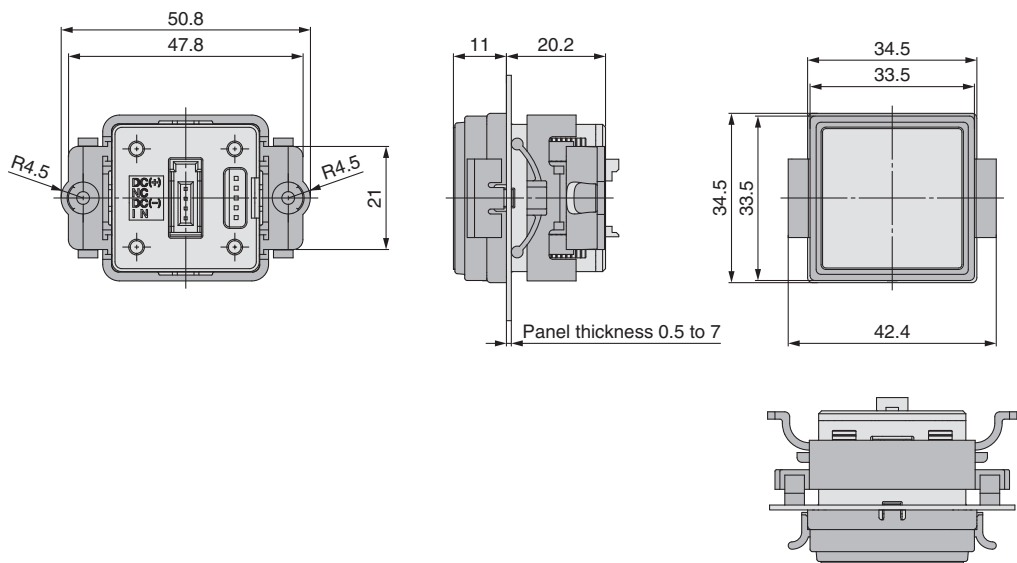
PFG300 Series

Dimensions

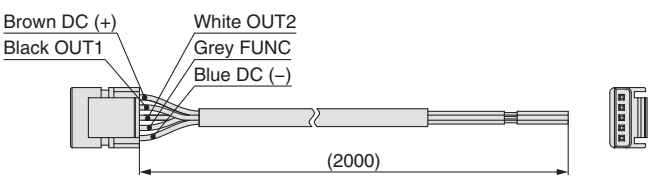
Panel mount adapter (Part no.: ZS-46-B)



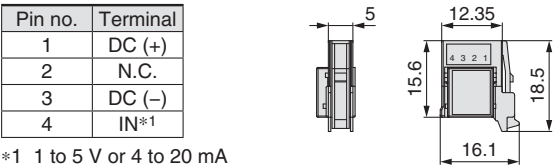
Panel mount adapter + Front protection cover (Part no.: ZS-46-D)



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

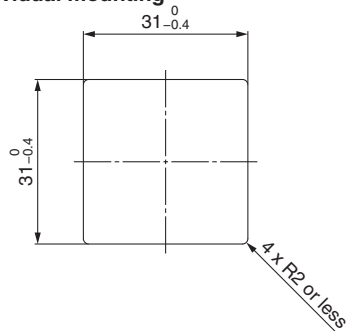
Cable Specifications

Conductor area	0.15 mm ² (AWG26)
Insulator	O.D. 1.0 mm
Colour	Brown, Blue, Black, White, Grey (5-core)
Sheath	Finished O.D. Ø 3.5

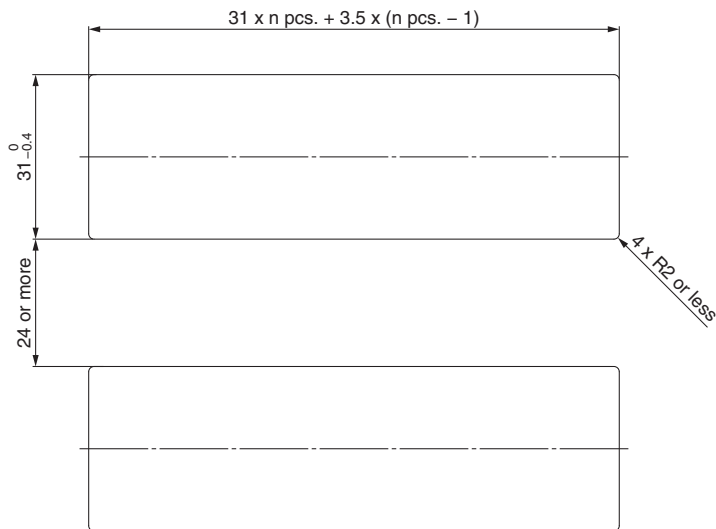
Dimensions

Panel fitting dimensions

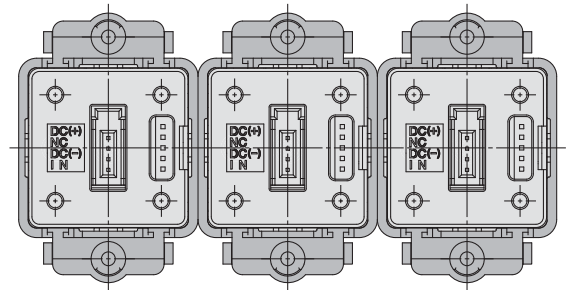
Individual mounting



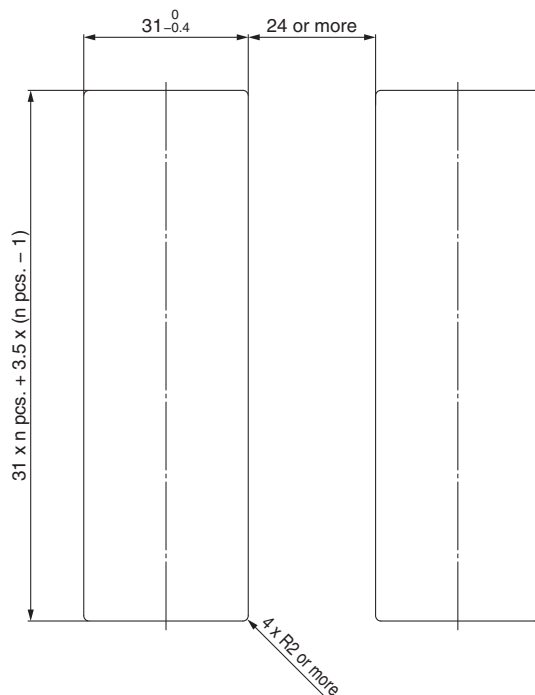
Multiple (2 pcs. or more) secure mounting <Horizontal>



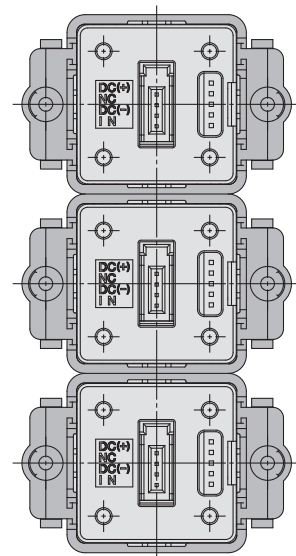
Panel mount example <Horizontal>



<Vertical>



Panel mount example <Vertical>



PFG300 Series

Function Details

Output operation

The output operation can be selected from the following:
Output (hysteresis mode and window comparator mode) corresponding to instantaneous flow or output (accumulated output and pulse output) corresponding to accumulated flow.

(Default setting: Hysteresis mode, Normal output)

Simple setting mode

Only the set values for instantaneous flow and accumulated flow can be changed. Output mode, output type, display colour, and accumulate pulse output cannot be changed.

Display colour

The display colour can be selected for each output condition. The selection of the display colour provides visual identification of abnormal values.

Green for ON, Red for OFF
Red for ON, Green for OFF
Red all the time
Green all the time

Delay time setting

The time from when the instantaneous flow reaches the set value to when the switch output operates can be set. Setting the delay time can prevent the switch output from chattering.

(Default setting: 0 s)

0.00 s
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
60 s

Digital filter setting

The time for the digital filter can be set to the sensor input. Setting the digital filter can reduce chattering of the switch output and flickering of the analogue output and the display.

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

(Default setting: 0 s)

0.00 s
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

FUNC output switching function

Analogue output, external input, or copy function can be selected.
(Default setting: Analogue output)

Selectable analogue output function

1 to 5 V or 0 to 10 V can be selected for the analogue voltage output type. (Default setting: 1 to 5 V)

External input function

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

Accumulated value external reset: A function to reset the accumulated flow value when an external input signal is applied.

In accumulated increment mode, the accumulated value will reset to and increase from zero.

In accumulated decrement mode, the accumulated value will reset to and decrease from the set value.

* When the accumulated value is stored to memory, every time the accumulated value external reset is activated, the memory will be accessed. Take into consideration that the maximum number of times the memory can be accessed is 1.5 million times. The total number of external inputs and the accumulated value memorising time interval should not exceed 1.5 million times.

Peak/Bottom value reset: Peak and bottom value are reset.

Forced output function

The output is turned on/off in a fixed state when starting the system or during maintenance. This enables the confirmation of wiring and prevents system errors due to unexpected output.

For the analogue output type: When ON, the output will be 5 V (or 10 V when 0 to 10 V is selected) or 20 mA, and when OFF, 1 V (or 0 V when 0 to 10 V is selected) or 4 mA.

* Also, an increase or decrease of the flow will not change the on/off status of the output while the forced output function is activated.

Accumulated value hold

The accumulated value is not cleared even when the power supply is turned off. The accumulated value is memorised every 2 or 5 minutes during measurement and continues from the last memorised value when the power supply is turned on again.

The maximum writable limit of the memory device is 1.5 million times, which should be taken into consideration.

Peak/Bottom value display

The maximum (minimum) flow rate is detected and updated from when the power supply is turned on. In peak (bottom) value display mode, this maximum (minimum) flow rate is displayed.

Setting of security code

The user can select whether a security code must be entered to release the key lock. At the time of shipment from the factory, it is set such that a security code is not required.

Keylock function

Prevents operation errors such as accidentally changing setting values

Reset to the default settings

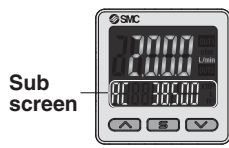
The product can be returned to its factory default settings.

Display with zero cut-off setting

When the flow is close to 0 l/min, the product will round the value down and zero will be displayed. A flow value may be displayed even when the flow rate is 0 l/min due to high pressure or depending on the installation. The zero-cut function will force the display to zero. The range to display zero can be changed.

■ Selection of display on sub screen

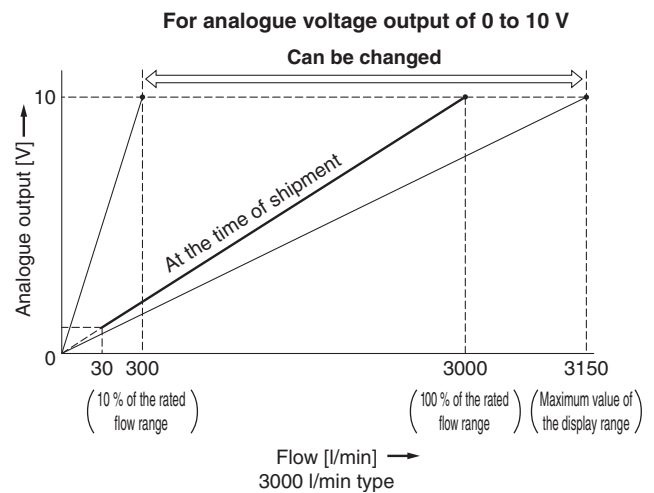
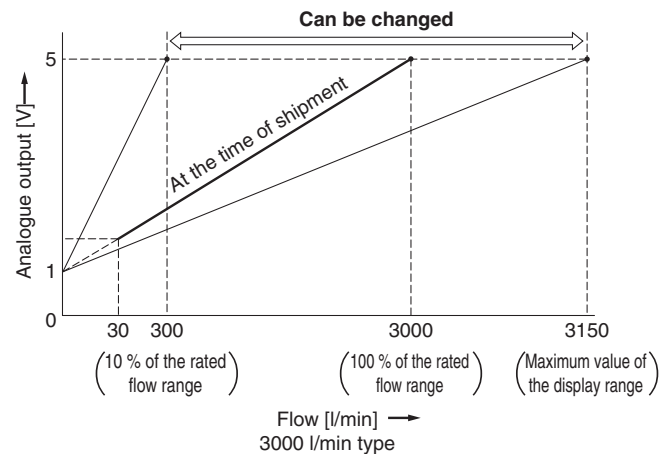
The display on the sub screen in measuring mode can be set.



Set value display	Accumulated value display	Peak value display
Displays the set value 	Displays the accumulated value 	Displays the peak value
Bottom value display	Line name display	OFF
Displays the bottom value 	Displays the line name (Up to 5 alphanumeric characters can be input.) 	Displays nothing

■ Analogue output free range function

This function allows a flow that generates an output of 5 V (or 10 V when 0 to 10 V is selected) or 20 mA to be changed. The value can be changed between 10 % of the maximum value of the rated flow and the maximum value of the display range.



■ Error display function

When an error or abnormality arises, the location and contents are displayed.

Display	Description	Contents	Action
Er1 Er2	OUT over current error	A load current of 80 mA or more is applied to the switch output (OUT).	Eliminate the cause of the over current by turning off the power supply and then turning it on again.
HHH	Instantaneous flow error	The flow rate exceeds the maximum value of the display range.	Decrease the flow rate.
LLL	Reverse flow error	There is a reverse flow equivalent to -5 % or more.	Change the flow to the correct direction.
999999 flashes x 10 ⁶	Accumulated flow error	The flow rate exceeds the accumulated flow rate range.	Clear the accumulated flow rate.
Er0 Er4 Er6 Er7 Er8 Er14 Er40	System error	Displayed if an internal error has occurred.	Turn the power off and then on again.
Er13	Copy error	The copy function does not operate properly.	After clearing the error by pressing the and buttons simultaneously for a minimum of 1 second, check the wiring and the model, and then attempt to copy again.

If the error cannot be solved after the above instructions are performed, please contact SMC for investigation.

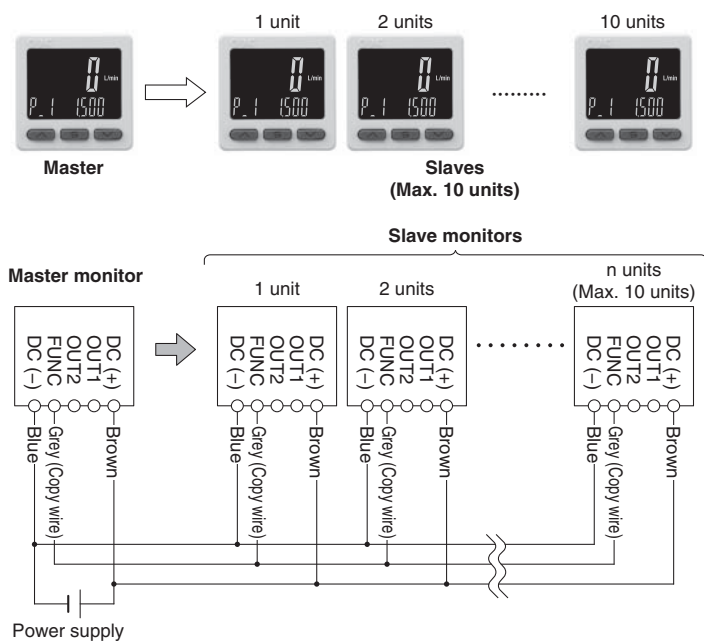
PFG300 Series

■ Copy function

The settings of the master monitor can be copied to the slave monitors, reducing setting labour and minimising the risk of setting mistakes.

The set value can be copied to up to 10 flow monitors simultaneously.

(Maximum transmission distance: 4 m)



- 1) Wire as shown in the figure on the left.
- 2) Select the slave monitor which is to be the master, and change it into a master using the buttons. (In the default setting, all flow monitors are set as slaves.)
- 3) Press the **S** button on the master monitor to start copying.

■ Selection of power-saving mode

The power-saving mode can be selected.

With this function, if no buttons are pressed for 30 s, it shifts to power-saving mode.

At the time of shipment from the factory, the product is set to the normal mode (the power-saving mode is turned off).

(During power-saving mode, [ECo] will flash in the sub screen and the operation light will be ON (only when the switch is ON).)

* There may be a difference in the displayed value on the connected flow switch and the flow monitor. When the flow monitor display is being used, it is recommended to set the flow switch display to OFF mode.

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.

- Caution:** Caution indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
- Warning:** Warning indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
- Danger:** Danger indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

Warning

- 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 catalogue information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.
- 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.
- Do not service or attempt to remove product and machinery/equipment until safety is confirmed.**
 - 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.
 - 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.
 - Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.
- Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.**
 - Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
 - Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalogue.
 - An application which could have negative effects on people, property, or animals requiring special safety analysis.
 - Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

Caution

- The product is provided for use in manufacturing industries.**
The product herein described is basically provided for peaceful use in manufacturing industries.
If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary.
If anything is unclear, contact your nearest sales branch.

Caution

SMC products are not intended for use as instruments for legal metrology.
Measurement instruments that SMC manufactures or sells have not been qualified by type approval tests relevant to the metrology (measurement) laws of each country. Therefore, SMC products cannot be used for business or certification ordained by the metrology (measurement) laws of each country.

Safety Instructions

Be sure to read “Handling Precautions for SMC Products” (M-E03-3) before using.

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- *1) ISO 4414: Pneumatic fluid power – General rules relating to systems.
ISO 4413: Hydraulic fluid power – General rules relating to systems.
IEC 60204-1: Safety of machinery – Electrical equipment of machines.
(Part 1: General requirements)
ISO 10218-1: Manipulating industrial robots - Safety.
etc.

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

- 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.
- 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.
- Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalogue for the particular products.

*2) Vacuum pads are excluded from this 1 year warranty.
A 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 vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

Compliance Requirements

- The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
- 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.