

2-Color Display

Digital Flow Switch

Series PFMB7



RoHS



How to Order

PFMB 7 201 - C8 - A - M

Type

7 Integrated display

Rated flow range (Flow rate range)

201 2 to 200 L/min

Flow adjustment valve

Nil	None
S	Yes

Port size

C8	ø8 (5/16") One-touch fitting
02*	Rc1/4
N02*	NPT1/4
F02*	G1/4 (Note 4)

Note 4) ISO1179-1 compliant

*Made to Order

Piping entry direction

Nil	L*
Straight	Bottom

*Made to Order

Output specifications

	OUT1	OUT2
A	NPN	NPN
B	PNP	PNP
C	NPN	Analog 1 to 5 V
D	NPN	Analog 4 to 20 mA
E*	PNP	Analog 1 to 5 V
F*	PNP	Analog 4 to 20 mA
G*	NPN	External input (Note)
H*	PNP	External input (Note)

Note) Accumulated flow, peak flow and minimum flow can be reset by external signal input.

*Made to Order

Calibration certificate (Note 1)

Nil	None
A*	With calibration certificate

Note 1) Certificate in both English and Japanese

*Made to Order

Unit specifications

M	SI unit only (Note 2)
Nil	Unit selection function (Note 3)

Note 2) Fixed unit: Instantaneous flow: L/min

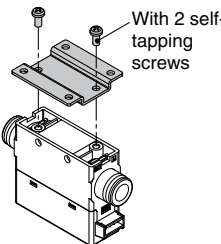
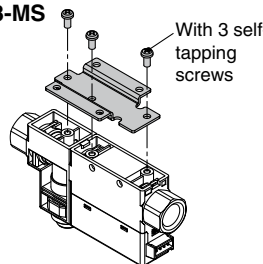
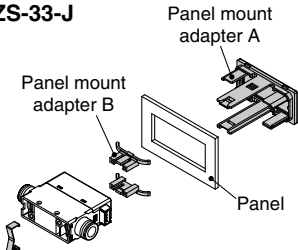
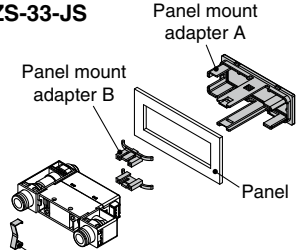
Accumulated flow: L

Note 3) Since the unit for Japan is fixed to SI due to new measurement law, this option is for overseas.

Unit can be changed. Instantaneous flow: L/min ↔ cfm

Accumulated flow: L ↔ ft³

Option 2

Nil	R	S
No bracket	With bracket (For without flow adjustment valve) ZS-33-M  With 2 self-tapping screws	With bracket (For with straight type flow adjustment valve) ZS-33-MS  With 3 self-tapping screws
T	V	
With panel mount adapter (For without flow adjustment valve) ZS-33-J  Panel mount adapter A Panel mount adapter B Panel Mounting bracket	With panel mount adapter (For with flow adjustment valve) ZS-33-JS  Panel mount adapter A Panel mount adapter B Panel Mounting bracket	

Note) Each option is not assembled with the product, but shipped together. If an accessory is required, order separately using "ZS" part numbers.

Option 1

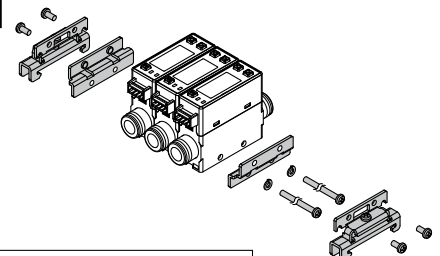
Nil	W
With lead wire with connector (2 m) ZS-33-D	With lead wire with connector (2 m) + Connector cover (Silicone rubber) ZS-33-F ZS-33-D
N	Note) If an accessory is required, order separately using "ZS" part numbers.
No lead wire	

DIN Rail Mounting Bracket (Order Separately)

ZS-33-R

Stations

1	1 station
2	2 stations
3	3 stations
4	4 stations
5	5 stations



- DIN rail is prepared by customer.
- DIN rail is not suitable for port size F02 (G1/4).

Refer to “Handling Precautions for SMC Products” for Flow Switch Precautions and the Operation Manual in our website for Specific Product Precautions.

Specifications

Model			PFMB7201	PFMB7501	PFMB7102
Fluid	Applicable fluid ^{Note 1)}		Air, N ₂ (Air quality grade is JIS B 8392-1 1.1,2 to 1.6.2, ISO8573-1 1.1.2 to 1.6.2.)		
	Fluid temperature range		0 to 50°C		
Flow	Detection method		Thermal type		
	Rated flow range		2 to 200 L/min	5 to 500 L/min	10 to 1000 L/min
	Set flow rate range	Instantaneous flow	2 to 210 L/min	5 to 525 L/min	10 to 1050 L/min
		Accumulated flow	0 to 999,999,999 L	0 to 999,999,990 L	
	Minimum setting unit	Instantaneous flow	1 L/min		
		Accumulated flow	1 L	10 L	
	Accumulated volume per pulse (Pulse width = 50 msec.)		1 L/pulse		10 L/pulse
Accumulated value hold function ^{Note 2)}		Interval of 2 or 5 minutes can be selected.			
Pressure	Rated pressure range		0 to 0.75 MPa	0 to 0.8 MPa	
	Proof pressure		1.0 MPa	1.2 MPa	
	Pressure loss		Refer to “Pressure Loss” graph.		
Electrical	Pressure characteristics ^{Note 3)}		±5%F.S. (0 to 0.75 MPa, 0.35 MPa reference)	±5%F.S. (0 to 0.8 MPa, 0.6 MPa reference)	
	Power supply voltage		12 to 24 VDC ±10%		
	Current consumption		55 mA or less		
	Protection		Polarity protection		
^{Note 11)} Accuracy	Display accuracy		±3%F.S.		
	Analog output accuracy		±3%F.S.		
	Repeatability		±1%F.S. (±2%F.S. when response time is set to 0.05 seconds.)		
	Temperature characteristics		±5%F.S. (0 to 50°C, 25°C reference)		
Switch output	Output type		NPN open collector PNP open collector		
	Output mode		Select from Hysteresis, Window comparator, Accumulated output or Accumulated pulse output modes.		
	Switch operation		Select from Normal or Reversed output.		
	Maximum load current		80 mA		
	Maximum applied voltage (NPN only)		28 VDC		
	Internal voltage drop (Residual voltage)		NPN output type: 1 V or less (at load current 80 mA) PNP output type: 2 V or less (at load current 80 mA)		
	Response time ^{Note 4)}		Select from 0.05 sec., 0.1 sec., 0.5 sec., 1 sec., or 2 sec.		
	Hysteresis ^{Note 5)}		Variable from 0		
	Protection		Short circuit protection		
Analog output ^{Note 6)}	Output type		Voltage output: 1 to 5 V, Current output: 4 to 20 mA		
	Impedance	Voltage output	Output impedance: Approx. 1 kΩ		
		Current output	Max. load impedance at power supply voltage 24 V: 600 Ω, at power supply voltage 12 V: 300 Ω		
External input ^{Note 8)}	Response time ^{Note 7)}		Linked with the response time of the switch output.		
	External input		Input voltage: 0.4 V or less (reed or solid state) for 30 msec. or longer		
Display	Input mode		Select from Accumulated flow external reset or Peak/Bottom reset.		
	Reference condition ^{Note 9)}		Select from Standard condition or Normal condition.		
	Display mode		Select from Instantaneous flow or Accumulated flow.		
	Unit ^{Note 10)}	Instantaneous flow	L/min or cfm can be selected.		
		Accumulated flow	L or ft ³ can be selected.	L or ft ³ can be selected.	
	Displayable range	Instantaneous flow	–10 to 210 L/min (Displays [0] when the value is within the –1 to 1 L/min range.)	–25 to 525 L/min (Displays [0] when the value is within the –4 to 4 L/min range.)	–50 to 1050 L/min (Displays [0] when the value is within the –9 to 9 L/min range.)
		Accumulated flow	0 to 999,999,999 L		
	Minimum display unit	Instantaneous flow	1 L/min		
		Accumulated flow	1 L	10 L	
Display		Display method: LED Display color: Red/Green Display: 3 digit 7 segment			
Indicator LED		LED ON when switch output is ON. (OUT1: Green, OUT2: Red)			
Environmental	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		Operation: 0 to 50°C, Storage: –10 to 60°C (No condensation or freezing)		
Operating humidity range		Operation, Storage: 35 to 85%RH (No condensation or freezing)			
Standard		CE, UL (CSA), RoHS		CE, RoHS	
Piping	Piping specifications		Rc1/4, NPT1/4, G1/4, ø8 One-touch fitting	Rc1/2, NPT1/2, G1/2	
	Piping entry direction		Straight, Bottom		
Main materials of parts in contact with fluid ^{Note 12)}		FKM, Stainless steel 304, PPS, PBT, Brass (Electroless nickel plating), HNBR, Si, Au, GE4F		ADC, PPS, Stainless steel 304, Au HNBR, Si, GE4F	
Weight	Body		Rc1/4, NPT1/4/Straight: 70 g Bottom: 85 g G1/4/Straight: 115 g Bottom: 130 g ø8 One-touch fitting/Straight: 50 g Bottom: 65 g	100 g	
	Flow adjustment valve		+45 g	—	
	Lead wire		+35 g		
	Bracket		+20 g	+25 g	
	Panel mount adapter		+15 g	—	
DIN rail mounting bracket		+65 g	—		

Note 1) Refer to “Example of Recommended Pneumatic Circuit” on Features 2.

Note 2) 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 million cycles. 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 million = 5 million min = 9.5 years
 • 2 min interval: life is calculated as 2 min x 1 million = 2 million min = 3.8 years
 If the accumulated flow external reset is repeatedly used, the product life will be shorter than calculated life.

Note 3) Do not release the OUT side piping port of the product directly to the atmosphere without connecting piping. If the product is used with the piping port released to atmosphere, accuracy may vary.

Note 4) The time from when the flow is changed by a step input (when the flow rate changes from 0 to the maximum flow instantaneously) until the switch output turns ON (or OFF) when set at 90% of the rated flow rate.

Note 5) 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.

Note 6) When using a product with an analog output

Note 7) The time from when the flow is changed as a step input (when the flow rate changes from 0 to the maximum flow instantaneously) until the analog output reaches 90% of the rated flow rate.

Note 8) When using a product with an external input

Note 9) The flow rate given in the specification is the value at standard condition. To convert the units from standard condition to normal condition, use the following conversion calculation:
Flow rate at standard condition x 0.927 = Flow rate at normal condition

Note 10) Setting is only possible for models with the unit selection function.

Note 11) Refer to “Straight Piping Length and Accuracy” on page 4 for details.

Note 12) Refer to “Construction/Fluid Contact Parts” on page 5 for details.