3-Color Display
Digital Flow Switch for Water
PF3W Series

How to Order

For how to order of remote monitor unit, refer to page 24.

Remote sensor unit **Output specification/Temperature sensor**

Symbol	OUT1	OUT2	Temperature sensor
	Flow rate	Temperature	
1	Analog 1 to 5 V	—	None
2	Analog 4 to 20 mA	—	
1T	Analog 1 to 5 V	Analog 1 to 5 V	With temperature sensor

∗ To use in combination with remote monitor (PF3W3 series), select analog output of 1 to 5 V of flow rate (output symbol "-1" or "-1T").
∗ Analog output of 4 to 20 mA with temperature sensor is made to order. (Refer to page 15.)

Remote sensor unit/Unit printed on label

Symbol	Instantaneous flow	Temperature
Nil	L/min	°C
G∗1	L/min (gal/min)	°C/°F

∗1 Under the New Measurement Act, units other than SI (symbol "Nil") cannot be used in Japan.
∗ G: Made to order
Reference: 1 [L/min] ↔ 0.2642 [gal/min]
1 [gal/min] ↔ 3.785 [L/min]
°F = 9/5°C + 32

Remote sensor unit **PF3W 5 04 □ – □ 03 – 1T □ – □ □ □ – □**

Integrated display **PF3W 7 04 □ – □ 03 – AT □ – M □ □ – □**

Type

5	Remote sensor unit
7	Integrated display

Rated flow range (Flow range)

Symbol	Rated flow range
04	0.5 to 4 L/min
20	2 to 16 L/min
40	5 to 40 L/min
11	10 to 100 L/min
21	50 to 250 L/min

Thread type

Nil	Rc
N	NPT
F	G∗1

∗1 ISO 228 equivalent

Port size

Symbol	Port size	Rated flow range 04	20	40	11	21
03	3/8	●	●	—	—	—
04	1/2	—	●	●	—	—
06	3/4	—	—	●	●	—
10	1/1	—	—	—	●	—
12	1 1/4	—	—	—	—	●
14	1 1/2	—	—	—	—	●

Flow adjustment valve

Symbol	With/without flow adjustment valve	Rated flow range 04	20	40	11	21
Nil	None	●	●	●	●	●
S	Yes	●	●	●	—	—

∗ 100 and 250 L/min types with flow adjustment valves are not available.
∗ The flow adjustment valve of this product is not suitable for applications which require constant adjustment of flow rate.

Integrated display **Output specification/Temperature sensor**

Symbol	OUT1	OUT2		Temperature sensor
	Flow rate	Flow rate	Temperature	
A	NPN	NPN	—	None
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∗1	—	
H	PNP	External input∗1	—	
AT	NPN	(NPN) ⇄∗2	NPN	With temperature sensor
BT	PNP	(PNP) ⇄∗2	PNP	
CT	NPN	(Analog 1 to 5 V) ⇄∗2	Analog 1 to 5 V	
DT	NPN	(Analog 4 to 20 mA) ⇄∗2	Analog 4 to 20 mA	
ET	PNP	(Analog 1 to 5 V) ⇄∗2	Analog 1 to 5 V	
FT	PNP	(Analog 4 to 20 mA) ⇄∗2	Analog 4 to 20 mA	

∗1 External input: The accumulated value, peak value, and bottom value can be reset.
∗2 For units with temperature sensor, only OUT2 can be set as either temperature output or flow rate output. Setting when shipped is for temperature output.

Calibration certificate (Only for flow rate)

Nil	None
A	With calibration certificate

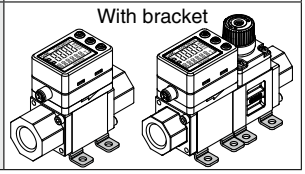
∗ The certificate is written in both Japanese and English.
The integrated display type with temperature sensor can only display the flow rate.

Made to order

X109	EPDM seal material
X128	Analog 4 to 20 mA 2-output type∗1
X143	Brass piping material specification
X445	IO-Link compatible∗2

∗1 Applicable only for remote type with temperature sensor (Refer to page 15.)
∗2 Integrated display type only

Bracket (Option)

Nil	None
R	With bracket 

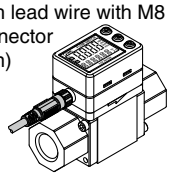
∗ Bracket is not available for 250 L/min type.

Integrated display/Unit specification

Symbol	Instantaneous flow	Accumulated flow	Temperature
M	L/min	L	°C
G	gal/min	gal	°C
F	gal/min	gal	°F
J	L/min	L	°F

∗ Under the New Measurement Act, units other than SI (symbol "M") cannot be used in Japan.
∗ G, F, J: Made to order
Reference: 1 [L/min] ↔ 0.2642 [gal/min]
1 [gal/min] ↔ 3.785 [L/min]
°F = 9/5°C + 32

Lead wire (Option)

Nil	N
With lead wire with M8 connector (3 m) 	Without lead wire with M8 connector 

Options/Part Nos.

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

Description	Part no.	Qty.	Note	
Bracket∗1	ZS-40-K	1	For PF3W704/720/504/520	With 4 tapping screws (3 x 8)
	ZS-40-L	1	For PF3W740/540	With 4 tapping screws (3 x 8)
	ZS-40-M	1	For PF3W711/511	With 4 tapping screws (4 x 10)
Lead wire with M8 connector	ZS-40-A	1	Lead wire length: 3 m	

∗1 For units with flow adjustment valve, 2 brackets are required.

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

Specifications (Integrated Display)

Model			PF3W704	PF3W720	PF3W740	PF3W711	PF3W721
Applicable fluid			Water and ethylene glycol aqueous solution (with viscosity of 3 mPa·s [3 cP] or less)*1				
Detection method			Karman vortex				
Rated flow range			0.5 to 4 L/min	2 to 16 L/min	5 to 40 L/min	10 to 100 L/min	50 to 250 L/min
Display flow range			0.35 to 5.50 L/min (Flow under 0.35 L/min is displayed as "0.00")	1.7 to 22.0 L/min (Flow under 1.7 L/min is displayed as "0.0")	3.5 to 55.0 L/min (Flow under 3.5 L/min is displayed as "0.0")	7 to 140 L/min (Flow under 7 L/min is displayed as "0")	20 to 350 L/min (Flow under 20 L/min is displayed as "0")
Set flow range			0.35 to 5.50 L/min	1.7 to 22.0 L/min	3.5 to 55.0 L/min	7 to 140 L/min	20 to 350 L/min
Smallest settable increment			0.01 L/min	0.1 L/min		1 L/min	2 L/min
Conversion of accumulated pulse (Pulse width: 50 ms)			0.05 L/pulse	0.1 L/pulse	0.5 L/pulse	1 L/pulse	2 L/pulse
Fluid temperature			0 to 90°C (No freezing or condensation)				0 to 70°C (No freezing or condensation)
Display unit			Instantaneous flow: L/min, Accumulated flow: L				
Accuracy			Display value: ±3% F.S. Analog output: ±3% F.S.				
Repeatability			±2% F.S.*2				
Temperature characteristics			±5% F.S. (25°C standard)				
Operating pressure range*3			0 to 1 MPa				
Proof pressure*3			1.5 MPa				
Pressure loss (without flow adjustment valve)			45 kPa or less at the maximum flow				60 kPa or less at the maximum flow
Accumulated flow range*4			99999999.9 L		999999999 L		
			By 0.1 L	By 0.5 L	By 1 L		
Switch output			NPN or PNP open collector output				
	Max. load current		80 mA				
	Max. applied voltage		28 VDC				
	Internal voltage drop		NPN: 1 V or less (at load current of 80 mA) PNP: 1.5 V or less (at load current of 80 mA)				
	Response time*2, 5		0.5 s/1 s/2 s				
	Output protection		Short-circuit protection				
	Output mode	**Flow rate**	Select from Hysteresis, Window comparator, Accumulated output, or Accumulated pulse output modes.				
		Temperature	Select from Hysteresis mode or Window comparator mode.				
Analog output	**Response time***6		0.5 s/1 s/2 s (linked with the switch output)				
	Voltage output		Voltage output: 1 to 5 V Output impedance: 1 kΩ				
	Current output		Output current: 4 to 20 mA Max. load impedance: 300 Ω for 12 VDC, 600 Ω for 24 VDC				
Hysteresis			Variable				
External input			Voltage free input: 0.4 V or less (Reed or Solid state), input for 30 ms or longer				
Display method			2-screen display (Main screen: 4-digit, 7-segment, 2-color, Red/Green Sub screen: 6-digit, 11-segment, White) Display values updated 5 times per second				
Indicator light			Output 1, Output 2: Orange				
Power supply voltage			12 to 24 VDC ±10%				
Current consumption			50 mA or less				
Environment	**Enclosure**		IP65				
	Operating temperature range		0 to 50°C (No freezing or condensation)				
	Operating humidity range		Operation, Storage: 35 to 85% R.H. (No condensation)				
	Withstand voltage*7		1000 VAC for 1 minute between terminals and housing				
	Insulation resistance		50 MΩ or more (500 VDC measured via megohmmeter) between terminals and housing				
Standards and regulations			CE marking (EMC directive/RoHS directive), UL (CSA)				
Wetted parts material*8			PPS, Stainless steel 304, FKM, SCS13				
			Non-grease				
Piping port size*9			3/8	3/8, 1/2	1/2, 3/4	3/4, 1	1 1/4, 1 1/2
Weight	**Without temperature sensor/Without flow adjustment valve**		210 g	260 g	410 g	720 g	890 g
	With temperature sensor/Without flow adjustment valve		285 g	335 g	530 g	860 g	1075 g
	Without temperature sensor/With flow adjustment valve		310 g	360 g	610 g	—	—
	With temperature sensor/With flow adjustment valve		385 g	435 g	730 g	—	—
	With lead wire with connector		+85 g				

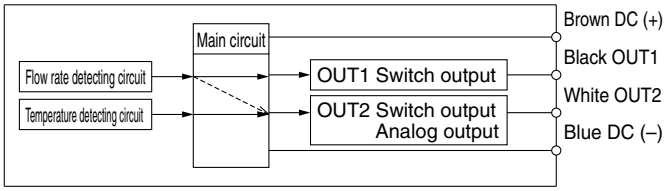
∗1 Refer to the graph of measurable range for ethylene glycol aqueous solution on page 10. Measurement is possible as long as the fluid does not corrode the wetted parts and viscosity is 3 mPa·s (3 cP) or less. Be aware that water leakage may occur due to internal seal shrinkage or swelling depending on the type of fluid.
∗2 If 0.5 s is selected for the response time of the switch output, the repeatability will be ±3% F.S.
∗3 The operating pressure range and proof pressure may change according to the fluid temperature. Refer to the graphs on page 8.
∗4 Cleared when the power supply is turned off. The hold function can be selected. (Intervals of 2 or 5 minutes can be selected.)
If the 5-minute interval is selected, the life of the memory element (electronic parts) is limited to 1 million times. (If energized for 24 hours, life is calculated as 5 minutes x 1 million = 5 million minutes = about 9.5 years.) Therefore, if using the hold function, calculate the memory life for your operating conditions, and use within this life.
∗5 The response time when the set value is 90% in relation to the step input (The response time is 7 s when it is output by the temperature sensor.)
∗6 The response time until the set value reaches 90% in relation to the step input (The response time is 7 s when it is analog output by the temperature sensor.)
∗7 When the temperature sensor is used, it will be 250 VAC.
∗8 For details, refer to "Wetted Parts Construction" on page 10.
∗9 When the piping diameter or piping passage is restricted, the specifications may not be satisfied.
∗ 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.

Temperature Sensor Specifications

Rated temperature range	0 to 100°C*1
Set/Display temperature range	–10 to 110°C
Smallest settable increment	1°C
Display unit	°C
Display accuracy	±2°C
Analog output accuracy	±3% F.S.
Response time	7 s*2
Ambient temperature characteristics	±5% F.S.

∗1 The rated temperature range refers solely to that of the temperature sensor. The fluid temperature range specification of the flow switch as a whole is **0 to 90°C**.
∗2 The response time refers solely to that of the temperature sensor.

The output related to the temperature sensor is OUT2 only.



The OUT2 can be selected from either the output for temperature or flow rate by button operation.