

3-Colour Display

Digital Flow Switch for Water

PF3W Series



RoHS

How to Order

Remote sensor unit Output specification/Temperature sensor

For how to order the remote monitor unit, refer to page 31.



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

- * To use in combination with the remote monitor (PFG200/PF3W3 series), select 1 to 5 V for the flow rate analogue output (output symbol "1" or "1T").
- * The 4 to 20 mA analogue output type with a temperature sensor is only available as a made to order. (Refer to page 22.)

Remote sensor unit/Unit printed on label

Symbol	Instantaneous flow	Temperature
—	l/min	°C
G*1	l/min (gal/min)	°C/°F

- *1 Under the New Measurement Act, units other than SI (symbol "—") 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

Integrated display



PF3W 5 04 — — 03 — 1T — — — — —
PF3W 7 04 — — — — 03 — BT — M — — — — —

1 Type

5	Remote sensor unit
7	Integrated display

2 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

3 Flow adjustment valve

Symbol	With/without flow adjustment valve	Rated flow range				
		04	20	40	11	21
—	Without	●	●	●	●	●
S	With	●	●	●	—	—

- * 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 the constant adjustment of the flow rate.

7 Lead wire (Option)

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

8 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

- * 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

9 Brackets (Option)

—	None
R	With brackets

- * Brackets are not available for the 250 l/min type.

10 Calibration certificate (Only for flow rate)

—	None
A	With calibration certificate

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

11 Made to order

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

- *1 Applicable only for the remote type with a temperature sensor (Refer to page 22.)
- *2 Integrated display type only

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 a 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 a 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. Analogue 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 max. flow				60 kPa or less at the max. 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	Select from Hysteresis, Window comparator, Accumulated output, or Accumulated pulse output modes.			
Analogue output	Flow rate	Select from Hysteresis mode or Window comparator mode.			
	Temperature				
	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-colour, 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 min between terminals and housing			
	Insulation resistance	50 MΩ or more (500 VDC measured via megohmmeter) between terminals and housing			
Standards and regulations	CE/UKCA marking, 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	890 g
	With temperature sensor/Without flow adjustment valve	285 g	335 g	530 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 "Measurable Range for Ethylene Glycol Aqueous Solution" graph on page 16. Measurement is possible as long as the fluid does not corrode the wetted parts and the 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, proof pressure, and available flow range vary depending on the fluid temperature. Refer to the graphs on page 14.
- *4 It is cleared when the power supply is turned OFF. The hold function can be selected. (Intervals of 2 or 5 mins can be selected.)
If the 5-min interval is selected, the life of the memory element (electronic part) is limited to 1 million times. (If energised for 24 hours, life is calculated as 5 mins x 1 million = 5 million mins = 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 analogue output by the temperature sensor.)
- *7 When the temperature sensor is used, it will be 250 VAC.
- *8 For details, refer to the "Wetted Parts Construction" on page 16.
- *9 When the piping diameter or piping passage is restricted, the specifications may not be satisfied.
- * Products with tiny scratches, marks, or display colour or brightness variations which do not affect the performance of the product are verified as conforming products.

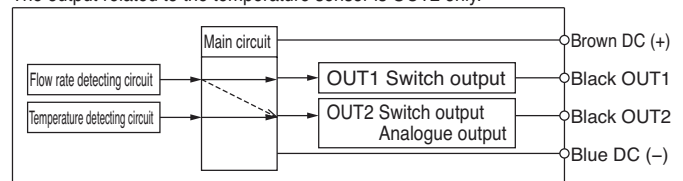
Temperature Sensor Specifications

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
Analogue 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.



OUT2 can output either the temperature or flow rate by button operation.