VF-2000 Vortex Flow Sensor

DESCRIPTION

The VF-2000 Flow Sensor offers a cost-effective instrument for the measurement of liquid flow.
A simple and compact design makes the VF-2000 a good choice for the measurement of water, pure water, cooling water.
Current output model, Pulse output model and Display model with current / alarm outputs are available.

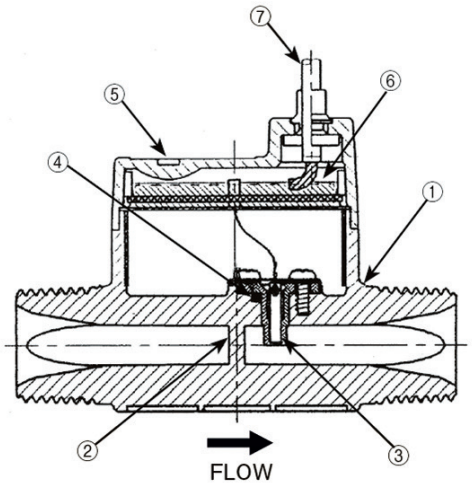


KEY FEATURES

- **Simple and compact design**
  The VF-2000 Flow Sensor is assembled with a few pieces of components. The sensor body and Shedder bar (vortex generator) are molded as one component. This design approach has reduced the cost as well as the size and weight of the flowmeter. Sensor body is made of PPS (Polyphenylene sulfide) and is designed to eliminate deposits.
- **No maintenance cost**
  Since the VF-2000 has no moving parts, no maintenance is needed.
- **Low pressure loss**
  A combination of straight flow path and Shedder bar gives a lower pressure loss compared with other types of flowmeters.
- **Display model with current and alarm output**
  3-digit LED display for flow rate, current output and alarm outputs (2-point) are provided in compact design.
- **CE Marking**
  The VF-2000 meets the EC directive for CE mark.

CONSTRUCTION

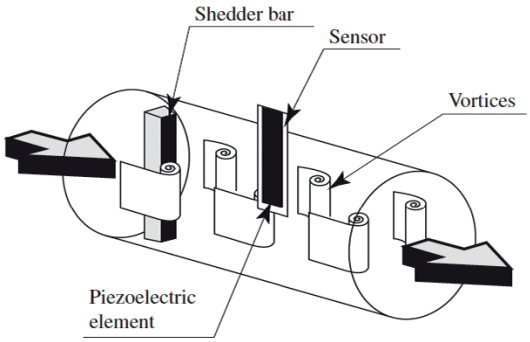
- VF-201□
- VF-202□



Part no	Name
1	Sensor body
2	Shedder bar (cast with Sensor body)
3	Sensor
4	O-ring
5	Cover
6	Signal processing board
7	Cable

OPERATING PRINCIPLE

A bluff body or Shedder bar in the flow generates a street of vortices downstream. The VF-2000 Flow Sensor measures the flow rate by counting the number of vortices with a piezoelectric sensor.



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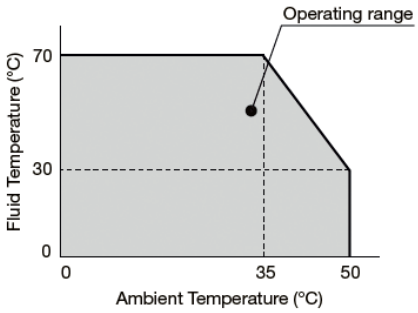
STANDARD SPECIFICATIONS

Specifications			Model		
			Current Output Model	Pulse Output Model	Display and Current Output Model
			VF-201□	VF-202□	VF-203□
Measurable Fluid			Pure water, Water		
Accuracy *1			±3%F.S.		±3%F.S. (1digit)
Repeatability			±0.5%F.S		
Fluid Pressure			0 to 1MPa		
Fluid Temperature			0 to 70°C		0 to 70°C (Refer to "Fluid and Ambient Temperature Range")
Ambient Temperature			0 to 50°C		0 to 50°C (Refer to "Fluid and Ambient Temperature Range")
Ambient Humidity			5 to 90%RH		
Power Supply			10.8 to 26.4V DC		
Rated Power			1W	0.5W	2W
Display		Flowrate	–		3-digit LED
		Alarm	–		2 LED (Alarm-1, Alarm-2)
Display Resolution		VF-2031	–		0.01 L/min or 0.01 GPM
		VF-2032	–		0.1 L/min or 0.01 GPM
		VF-2033	–		0.1 L/min or 0.1 GPM
Output			●Current output 4 to 20mA (3-wire) (0 to maximum flow) Load: 0 to 250 ohms at 12V DC 250 to 600 ohms at 24V DC (Refer to "Range of Load Resistance") Damping Time Constant 1 sec (63% response)	●Unscaled pulse output Open collector, Max. 10mA/30V DC Pulse duty factor; approx. 50% Output frequency at 100% flow VF-2021 - F01: 800Hz at 4 L/min VF-2021 - F02: 757Hz at 1 GPM VF-2022 - F01: 800Hz at 16 L/min VF-2022 - F02: 757Hz at 4 GPM VF-2023 - F01: 584Hz at 40 L/min VF-2023 - F02: 553Hz at 10 GPM	●Current output 4 to 20mA (3-wire) (0 to maximum flow) Load: 0 to 250 ohms at 12V DC 250 to 600 ohms at 24V DC (Refer to "Range of Load Resistance") Damping Time Constant 1 sec (63% response) ●Alarm output Alarm-1 and Alarm-2 Open collector, Max. 80mA/30V DC Hysterisis; equal to display resolution
Cable			0.2mm² × 3C (AWG24), 3m, Outside diameter 3.5mm (Soldered end finish)		0.2mm² × 5C (AWG24), 3m, Outside diameter 4.5mm (Soldered end finish)
Mass		Meter	60g		80g
		Cable	75g		90g
Enclosure Classification			IP64		
Flow Range		VF-20□1	0.5 to 4 L/min or 0.13 to 1 GPM		
		VF-20□2	2 to 16 L/min or 0.5 to 4 GPM		
		VF-20□3	4 to 40 L/min or 1 to 10 GPM		
Max. Pressure loss			40kPa		
Min. Straight Pipe Run			Upstream : 10D, Downstream : 5D (D : Nominal pipe size)		
Process Connection		VF-20□1	Taper pipe threads (JIS B 0203 / ISO 7/1) : Equivalent to R3/8"		
		VF-20□2	Taper pipe threads (JIS B 0203 / ISO 7/1) : Equivalent to R1/2"		
		VF-20□3	Taper pipe threads (JIS B 0203 / ISO 7/1) : Equivalent to R1/2"		
Materials	Wetted part	Sensor body	Polyphenylene sulfide (PPS)		
		Sensor	Piezoelectric element molded with PPS		
		O-ring	Fluorine rubber (FKM)		
	Cover		Poly-butylene trephthalate (PBT)		
	Cable sheath		Heat- resistant PVC		

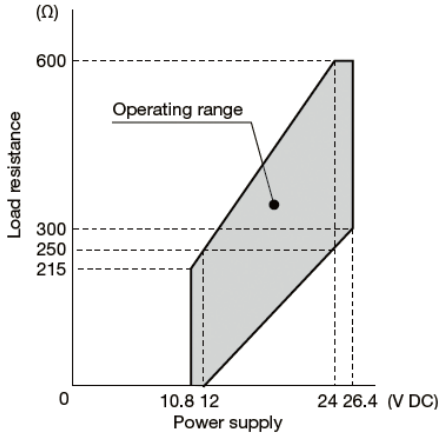
*1 Conditions for calibration
Fluid: Water, Fluid temperature: 20°C
Ambient temperature: 23°C, Supply voltage: 24V DC

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Fluid and Ambient Temperature Range
(only for Display type VF-203□)

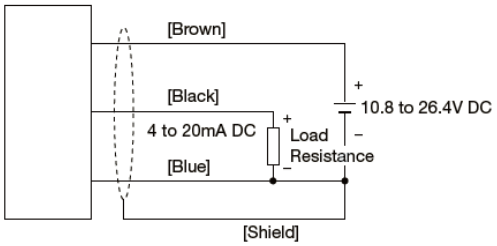


Range of Load Resistance
(VF-201□, VF-203□)

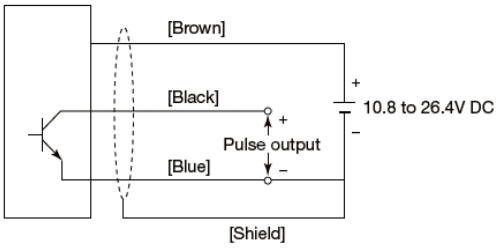


WIRING DIAGRAM

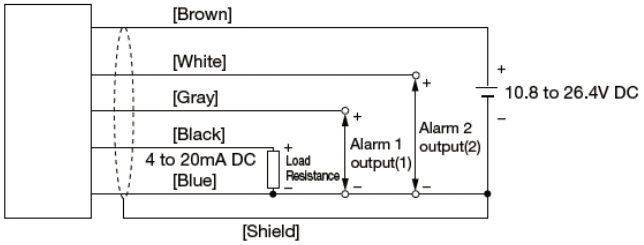
● Current Output Model (VF-201□)



● Pulse Output Model (VF-202□)



● Display / Current Output Modell (VF-203□)



MODEL CODE

Model Code						Description
VF - 20	□	□	-□	□	□	
Type/Output	1					Current output : 4 to 20mA DC
	2					Pulse output : Open collector (Unscaled)
	3					Display : Flow rate (3-digit LED), Alarm (2 LED) Current output : 4 to 20mA DC Alarm output : Open collector (2 points)
Nominal Size : Flow Range ; Connection Size		1				6 mm : 0.5 to 4 L/min or 0.13 to 1GPM ; 3/8"
		2				10 mm : 2 to 16 L/min or 0.5 to 4GPM ; 1/2"
		3				15 mm : 4 to 40 L/min or 1 to 10GPM ; 1/2"
O-ring Material			-F			Fluorine rubber (FKM)
Process Connection				0		Taper Pipe Threads Equivalent to R3/8 or Equivalent. to R1/2 (JIS B 0203 / ISO 7/1)
Flow Unit					1	L/min
					2	GPM

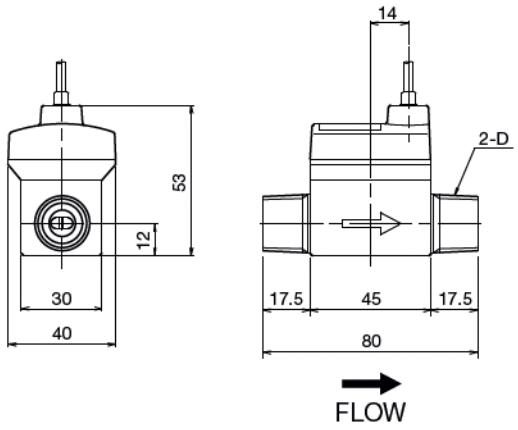
● Accessory Code

/RCT	Rc / Rc (Internal thread) Adapter [Material : 316 Stainless Steel]
/NPT	Rc / NPT(Internal thread) Adapter [Material : 316 Stainless Steel]

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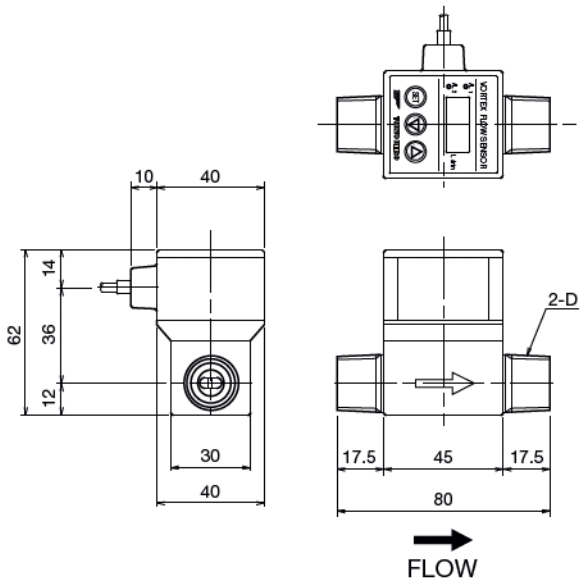
OUTLINE DIMENSIONS

- VF-201□
- VF-202□

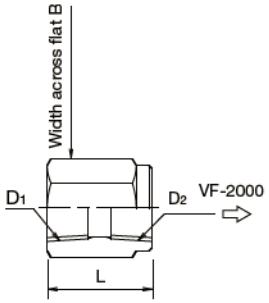


Model	Thread D
VF-20□1	Equivalent to R3/8
VF-20□2	Equivalent to R1/2
VF-20□3	Equivalent to R1/2

- VF-203□



Adapter



Mode	L	B	D1	D2	Mass(g)/1pc.
VF-20□1	28	22	Rc3/8 or 3/8NPT	Rc3/8	50
VF-20□2	33	27	Rc1/2 or 1/2NPT	Rc1/2	85
VF-20□3					

ORDERING INSTRUCTION

Specify the following when ordering:

1. Model code
2. Fluid name

*Specification is subject to change without notice.

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