

■ Best suitable for suction lift verification of small work piece

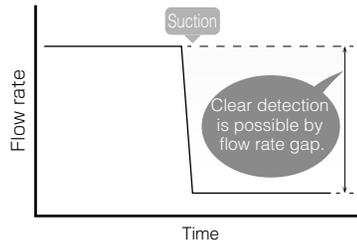
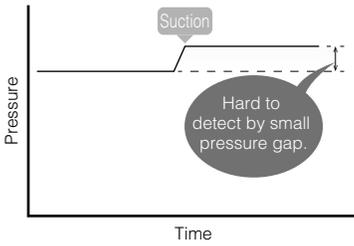
Small Flow Sensor FUS8 series

Characteristics

- Ultra-small and light weight
Width: 8.5mm, Height: 24mm, Length: 41mm, Weight: 10.7g (with ø4mm push-in fitting)
- A wide variety of connection method is available. The connection methods of ① ~ ④ are lined up. On top of it, various fitting combination for connection configuration are available.

No.	①	②	③	④
Connection method				
size	ø1.8, ø2, ø3, ø4mm	ø6×ø4mm	ø4, ø6mm	M5×0.8

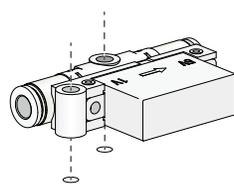
- Best suitable for suction lift verification. Non-linear type sensor suitable for suction lift verification.



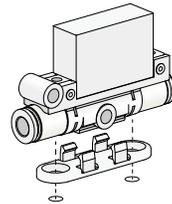
<Example applications>

- Suction lift verification of small work piece, which is hard to detect by pressure sensor.
- Verification for which the piping is long and hard to detect by pressure sensor.
- When vacuum flow is narrowed in order to secure pressure difference and the tact time to suction lift verification becomes longer.

- Three types of installation method are available.

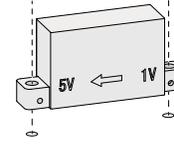


① Direct screw mounting



② Holder mounting

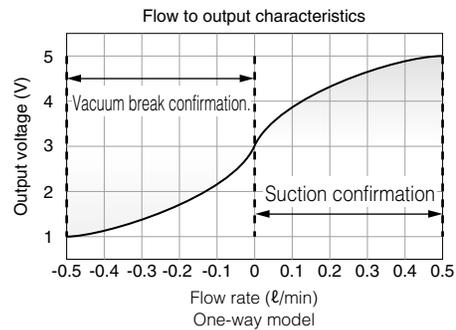
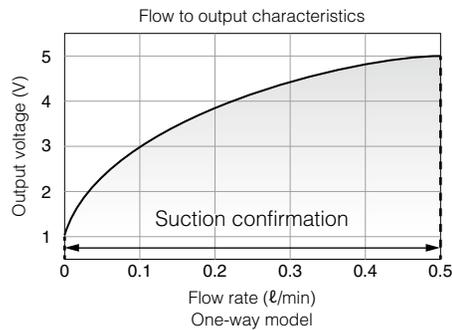
-Easy installation and removal of the product



③ Sensor head direct mount

-Installation on min. space is possible.

- Bidirectional flow measurement type, best suitable for suction transportation, is available. Bidirectional type enables suction lift and release verification. Thus, best suitable for suction transport application.



Model designation of Flow sensor (Example)



- (1) **FUS8**: Flow sensor (Non-linear type)
 (2) Output type
A: Analog type(1V to 5V)
 (3) Flow direction
F: One-directional
R: Bi-directional
 (4) Flow rate range (Full scale flow rate)
005: 0.5l/min
010: 1l/min
050: 5l/min
100: 10l/min
 (5) In-side port (6) Out-side port

Code	180 (*)	2 (*)	3	4	6
Size	ø1.8mm	ø2mm	ø3mm	ø4mm	ø6×ø4mm
Connection	Push-in fitting				Barb fitting

Code	N4	N6	M5	No code
Size	ø4mm	ø6mm	M5×0.8	-
Connection	Stem		female thread	sensor head unit

*Flow rate of ø1.8mm is max. 4l/min.

*Flow rate of ø2 mm is max. 5l/min.

*Size of In-side/Out-side port is selectable from the above list.

- (7) Cable
3: With cable (3 cores and 3 m)
No code: Without cable
 (8) Holder
NH: Without holder
No code: With holder

* Not selectable when sensor head unit is selected in (5) and (6).

Model designation of Cable



- (1) **FUS8**: Flow sensor (Non-linear type)
 (2) Cable
C33: 3 m of 3-core cable

Model code of Holder



- (1) Holder for flow sensor (Non-linear type)

Detailed Safety Instructions

Before using PISCO products, be sure to read "Safety Instructions" and "Common Safety Instructions for Products in This Catalog" on page 13 to 16.

- △Warning : 1. Never use the product in flammable gas environment. Since explosion-protection is not taken, explosion or fire may be caused.
 2. Do not use the product in the environment containing corrosive gases such as sulfurous acid gas.
 3. Never use the product for flammable gases.
 4. When wiring, make sure to turn off the power.
 5. DC stabilized power supply within rated value, insulated from AC power source, should be used. If the power supply is not insulated, there is a risk to get an electric shock. Non-stabilized power supply will exceed the rated voltage at its peak and it may damage the product or the accuracy.
- △Caution : 1. Since this product is not conformable to Measurement Act, please use it only for industrial purpose, but not for commercial purpose.
 2. When using this product for suction verification, make sure to place an air filter at upstream of suction side to prevent suction of foreign materials.
 3. When using this product for suction verification, take into the dew point of the atmosphere and ambient temperature and secure the condition which does not generate dew condensation inside of the piping.
 4. When using this product for vacuum use such as air intake, do not bend it in the vicinity of a tube fitting joint part. In case a tube around a tube fitting is stressed, install an insert ring and insert the tube into the tube.
 5. When this product is exposed to the vibration of sock of over 100m/sec².flow-output characteristics may fluctuate and the product may drop out of the holder. Therefore, do not apply excessive vibration of shock to the product.
 6. This product and wiring must be installed as far as possible from noise such as strong electric lines.
 7. Please be careful to counter-currents and surge currents because this product may result in damaging the products.
 8. Do not apply repetitive bending or tensile force on the lead wire. It will cause the wire to break.
 9. External force to the product can affect the flow output. Make sure the product is free from external force caused by sandwiching the product between something.
 10. Do not stress connector during operation. It will deform internal substrate or the body and affect flow output or leakage.
 11. Ambient temperature and fluid medium temperature should be within 0°C ~ 50°C. When due condensates subject to sudden change of ambient or fluid medium temperature change, do not use the product under such circumstance even within the temperature specification.
 12. Do not use the product under the operation pressure is less than the minimum limit or more than the maximum limit and the flow range beyond the specification, otherwise it may cause malfunction.
 13. Do not use the product where water, salt, grit and dust, and cutting chip are contained or circumstance where pressure is increased or reduced. Drastic temperature change or high humidity may cause dew condensation inside the product and may cause malfunction.
 14. Fluid medium should be air or Nitrogen and use with other medium is out of warranty.
 15. Fluid medium should be dry clean air which do not contain chlorine, sulfur and acid as well as dust and oil mist.
 16. Install a filter, an air dryer and an oil mist filter on the primary side of the sensor since compressed air from a compressor contains drain (water, oil oxide and foreign material and others). The mesh (woven wire) inside the sensor is installed of the purpose of rectifying flow inside and not for the purpose of getting rid of foreign materials. In order to get rid of foreign materials, please install filter separately.
 17. If any valve should be attached on the primary side of the sensor, use oil-free valve. Make sure to install a filter since some valves may generate abrasion powder.
 18. Output accuracy is affected by self-generation caused energizing other than temperature characteristics. When using, stand-by time (5 minutes and over after energizing) is required.
 19. Implement periodical maintenance more than once a year and check for the normal operation. Output voltage varies by max. ±6% F. S for one-directional and max. ±3% F. S. bi-direction al type from our initial setting value. (The variation definition by our reliability test.) Periodic operation check is recommended.
 20. Do not dismantle or modify the product. It may cause troubles.
 21. Case material is resin. Do not use solvent, alcohol, detergent to wipe off daub on the product. It may damage the resin.

Specification

Model code		FUS8-A-R005	FUS8-A-R010	FUS8-A-R050	FUS8-A-R100	FUS8-A-F005	FUS8-A-F010	FUS8-A-F050	FUS8-A-F100
Description									
Flow rate range		-0.5 ~ 0.5 l/min	-1 ~ 1 l/min	-5 ~ 5 l/min	-10 ~ 10 l/min	0 ~ 0.5 l/min	0 ~ 1 l/min	0 ~ 5 l/min	0 ~ 10 l/min
Operating conditions		Clean air (JIS B8392-1, 1.1.1~1.6.2), Nitrogen							
Operating pressure range		-0.09 ~ 0.2 MPa (-26.58 ~ 59.06in.Hg)							
Proof pressure		0.3 MPa (-88.59in.Hg)							
Operating ambient temp. & hum.		32 ~ 122 °F (0 ~ 50°C) Max.80 %RH							
Fluid medium temp.		32 ~ 122 °F (0 ~ 50°C) (No dew condensation)							
Temperature range at storing		-4 ~ 140 °F (-20 ~60°C) (No dew condensation)							
Analog output accuracy		Non linear analog output 1-5V							
Linearity									
Pressure characteristics		Max. ±5 %F.S (-0.09 ~ 0.2MPa, Criteria: 25°C, 0.1Mpa)				Max. ±10 %F.S (-0.09 ~ 0.2MPa, Criteria: 25°C, 0.1Mpa)			
Temperature characteristics		Max. ±0.3 %F.S (0 ~ 50°C, Criteria: 25°C)				Max. ±0.6 %F.S (0 ~ 50°C, Criteria: 25°C)			
Repeatability		Max. ±2 %F.S							
Power supply voltage fluctuation		Max. ±2 %F.S (VDC24 ± 10%)							
Response time		Max. 5 ms		Max. 8 ms		Max. 5 ms		Max. 8 ms	
Current consumption		Max. 30 mA							
Power supply voltage		VDC24±10 %							

* Bi-directional type outputs 3V when the flow is 0, analog output will change to 5V when fluid left to right (from the view that connector is on right side.)

 The products listed in this page are ECO-friendly products.
* Please refer to page 4 for the details of ECO-friendly products.

FUS8 One-directional flow	Model code	FUS8 Bi-directional flow	Model code
	FUS8-A- <u>3</u> <u>4</u> - <u>5</u> <u>6</u> - <u>7</u> - <u>8</u>		FUS8-A- <u>3</u> <u>4</u> - <u>5</u> <u>6</u> - <u>7</u> - <u>8</u>
	FUS8-A-F005		FUS8-A-R005
	FUS8-A-F005-3		FUS8-A-R005-3
	FUS8-A-F005- <u>5</u> <u>6</u>		FUS8-A-R005- <u>5</u> <u>6</u>
	FUS8-A-F005- <u>5</u> <u>6</u> -3		FUS8-A-R005- <u>5</u> <u>6</u> -3
	FUS8-A-F005- <u>5</u> <u>6</u> -3-NH		FUS8-A-R005- <u>5</u> <u>6</u> -3-NH
	FUS8-A-F010		FUS8-A-R010
	FUS8-A-F010-3		FUS8-A-R010-3
	FUS8-A-F010- <u>5</u> <u>6</u>		FUS8-A-R010- <u>5</u> <u>6</u>
	FUS8-A-F010- <u>5</u> <u>6</u> -3		FUS8-A-R010- <u>5</u> <u>6</u> -3
	FUS8-A-F010- <u>5</u> <u>6</u> -3-NH		FUS8-A-R010- <u>5</u> <u>6</u> -3-NH
	FUS8-A-F050		FUS8-A-R050
	FUS8-A-F050-3		FUS8-A-R050-3
	FUS8-A-F050- <u>5</u> <u>6</u>		FUS8-A-R050- <u>5</u> <u>6</u>
	FUS8-A-F050- <u>5</u> <u>6</u> -3		FUS8-A-R050- <u>5</u> <u>6</u> -3
	FUS8-A-F050- <u>5</u> <u>6</u> -3-NH		FUS8-A-R050- <u>5</u> <u>6</u> -3-NH
	FUS8-A-F100		FUS8-A-R100
	FUS8-A-F100-3		FUS8-A-R100-3
	FUS8-A-F100- <u>5</u> <u>6</u>		FUS8-A-R100- <u>5</u> <u>6</u>
	FUS8-A-F100- <u>5</u> <u>6</u> -3		FUS8-A-R100- <u>5</u> <u>6</u> -3
	FUS8-A-F100- <u>5</u> <u>6</u> -3-NH		FUS8-A-R100- <u>5</u> <u>6</u> -3-NH

* The above picture is with push-in fitting & cable, and holder type

* The above picture is with push-in fitting & cable, and holder type

 Caution
*For 5 and 6, please select Intake and Output port size.

Accessories

FUS8-C33 Cable	Model code	FUSH Holder	Model code
	FUS8-C33		FUSH008P01

 Package specification
1 pc. in a bag