



Micro Flow Sensor

(Model: F1031V-2)

Manual

Version: 1.2

Issue Date: 2020.11.03



F1031V-2 Flow Sensor

Profile

The F1031V-2 flow sensor uses the thermodynamic principle to detect flow rate of the gas medium in the flow channel, with good precision and repeatability. Temperature sensors are built-in and every one product is calibrated for temperature compensation. At the same time, it has linear analog voltage output, convenient to use.

Features

Latest MEMS Sensor chip technology
 High accuracy, quick response, good repeatability
 Detection micro flow accurately
 It is calibrated completely and temperature compensated



Main Applications

Intensive care ventilator
 Portable ventilator

Technical Parameters Table1. Technical Parameters

Model	F1031V-2			
Measuring Range ^①	100, 150, 200, 300SLM ^②			
	Min	Typical	Max	Unit
Full Scale Output	4.34	4.50	4.66	V
Zero Output	0.45	0.5	0.55	V
Output Impedance	-	1000	-	Ω
Working Voltage	4.95	5.0	14.0	V
Working Current	-	25	-	mA
Accuracy	-	±2.5	±4	%F.S
Repeatability	-	±0.5	±1	%F.S
Output Drift		0.12		%/°C
Signal noise	-	10	-	mV(Vrms)
Resistance	-	120	-	Pa/60SLM
Power consumption	-	125	-	mW/5V
Working pressure	-	-	100	kPa
Response Time ^③	-	10	-	ms
Working Temp. ^④	-25		65	°C
Storage Temp.	-40		90	°C

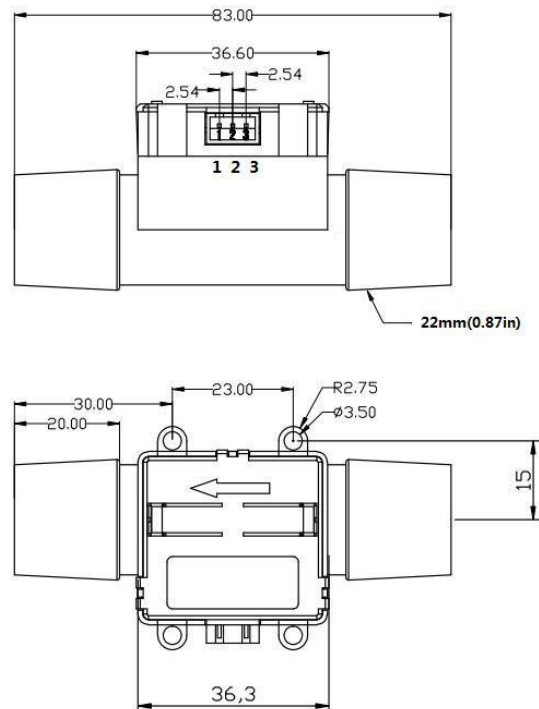


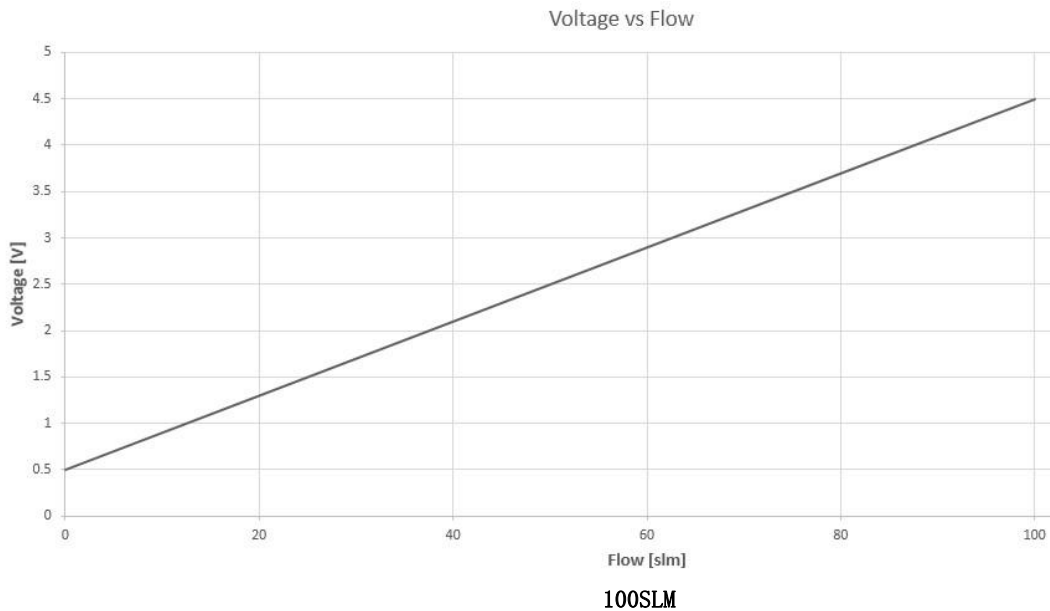
Fig1. Sensor Structure

Note:

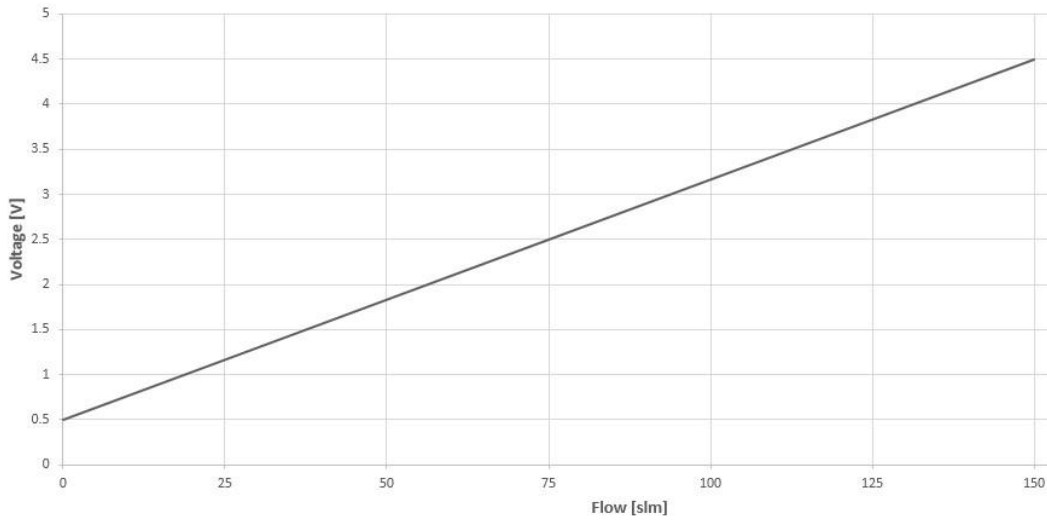
- ① The measuring range is optional between 20~300SLM.
- ② SLM means standard liter per minute. Standard-state: gas temperature is 20°C and pressure is 101.325 kPa. The testing environment is room temperature and clear air.
- ③ The response time could be customized for 15-1000ms.
- ④ The temperature compensation is for the tem. range of 0-50 °C and the compensation performance can't be ensured beyond the temperature range.

Pins Definition**Table 2. Pins definition**

Pin	Function
1(black or gray)	GND
2(red)	VCC
3(yellow)	OUT

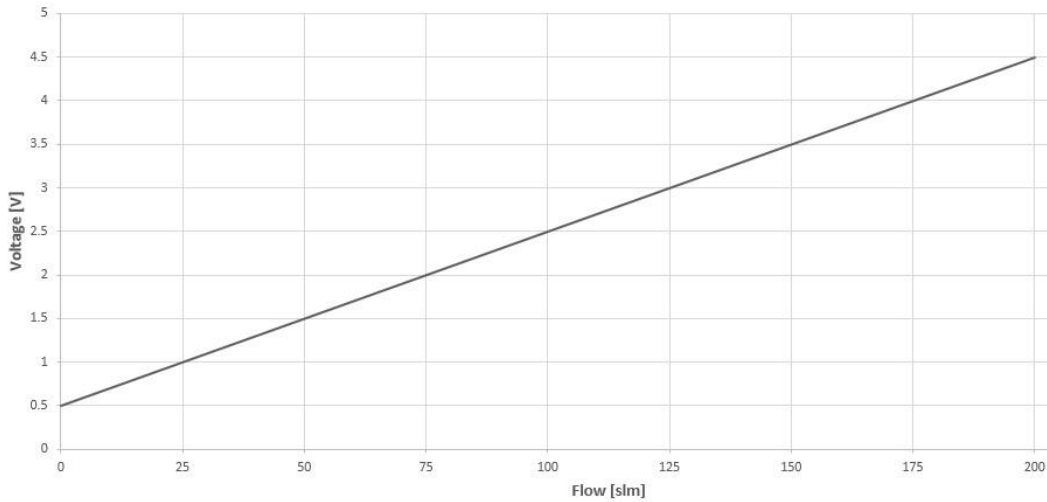
Output curve for different detection range.

Voltage vs Flow



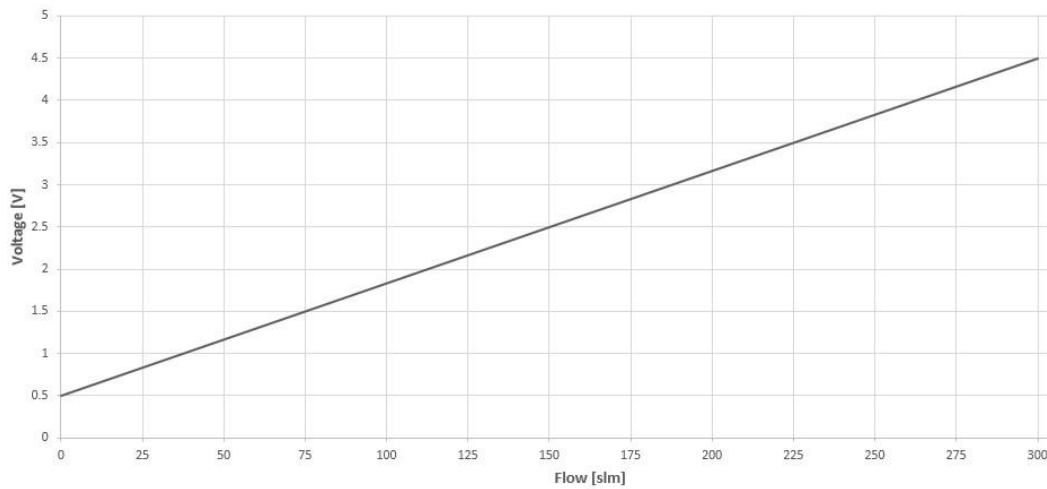
150SLM

Voltage vs Flow



200SLM

Voltage vs Flow



300SLM

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Calculation for Airflow

Actual flow=full scale * (sensor actual output voltage-zero output voltage) / (full scale output voltage-zero output voltage)

For example: the sensor full scale is 200 SLM, the sensor zero output voltage is 0.5V and full scale output voltage is 4.5V, and the actual output is 3.5V.

Then the actual flow=200 SLM * (3.5V – 0.5V)/(4.5V- 0.5V) = 150SLM

Cautions

1. Do not apply this product to systems involving personal safety
2. The air inlet and air outlet of the sensor need to be equipped with long straight pipe to ensure the product's performance. It is recommended to leave a straight pipe for the inlet with 10 times longer than the pipe diameter while the outlet will be 5 times longer.
3. If measured gas medium contains dirt, the sensor's lifespan will be shortened. We suggest users equip the sensor flow inlet with 5 micrometer precise filter.
4. The sensitivity of the product will reduce or be damaged if it contacts to water.
5. The wrong connecting of power supply will damage the internal circuit.