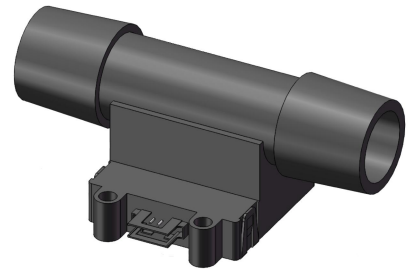


## XGZF4000 AIR FLOW SENSOR

### FEATURES

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- High sensitivity, wide measuring range
- Internal temperature compensation calibration
- High accuracy, high resolution
- Reliable quality, stable performance, low cost
- The latest generation of MEMS chip technology
- Linear output (Analog or Digital)
- Fast response time
- Resistant to condensated water



### APPLICATIONS

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- Portable Ventilator, Household Oxygen Generator
- CPAP Device
- Anesthesia for childbirth
- Critical care equipment
- HVAC
- Air purifier
- Environmental climate monitoring
- Fuel cell control and
- More applications for air flow control and measurement

### INTRODUCTION

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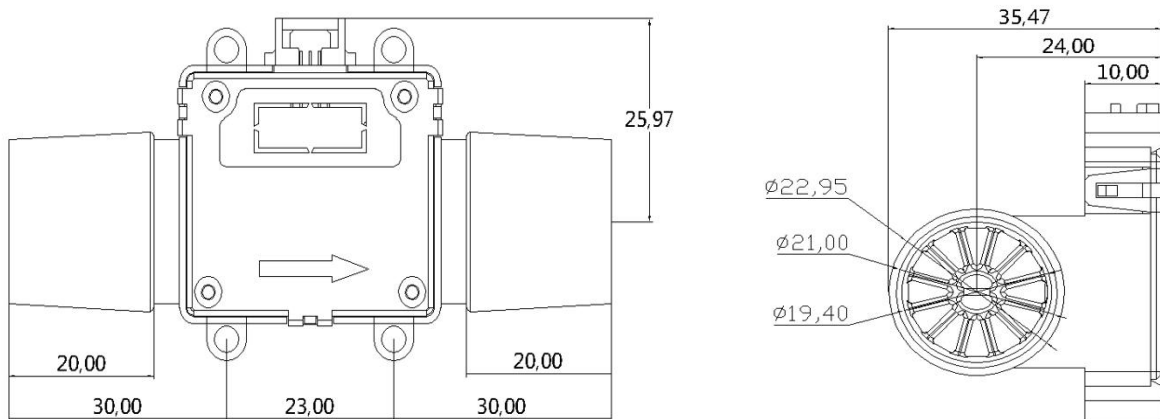
The XGZF4000 series adopts micro-electromechanical system (MEMS) flow sensor chip technology and thermodynamic principles to measure the flow of gaseous media in the flow channel. Reasonable flow channel design to make the pressures stable; it provides high-precision, fast response processing circuit, as well as MEMS integrated circuit + special calibration circuit that can process the internal temperature compensation and calibration. It can accurately obtain accurate, real-time and effective flow signals to ensure the high stability and reliability of the product.

## ELECTRONIC PERFORMANCE

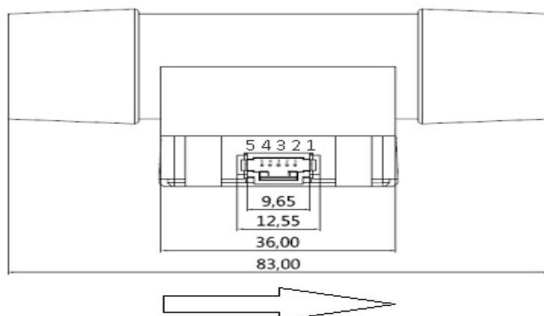
Unless otherwise specified, measurements were taken with a supply voltage of ( 8 ~ 24 ) VDC (Default: 12 VDC) Vdc at a temperature of  $25 \pm 1^\circ\text{C}$  and humidity ranging from 40 % ~ 60 % RH

Specifications	Min.	Typ.	Max	Unit
Analog output	0.5	-	4.5	V
Digital output	6554	-	57015	
Accuracy	-	$\pm 1.5$	-	%FS
Offset drift	-	0.02	-	%FS
Resolution	-	0.1	-	%FS
Range	0	-	300	SLM
FS output	4.4	4.5	4.55	V
Offset output	0.44	0.5	0.55	V
Response time		20		mSec
Working voltage	8	12	24	V
Working current		24	30	mA
Working pressure	0.3	-	0.5	Mpa
Compensation Temp.	0	-	60	$^\circ\text{C}$
Working temp.	-25	-	85	$^\circ\text{C}$
Storage temp.	-40	-	90	$^\circ\text{C}$

## DIMENSION (Unit:mm)



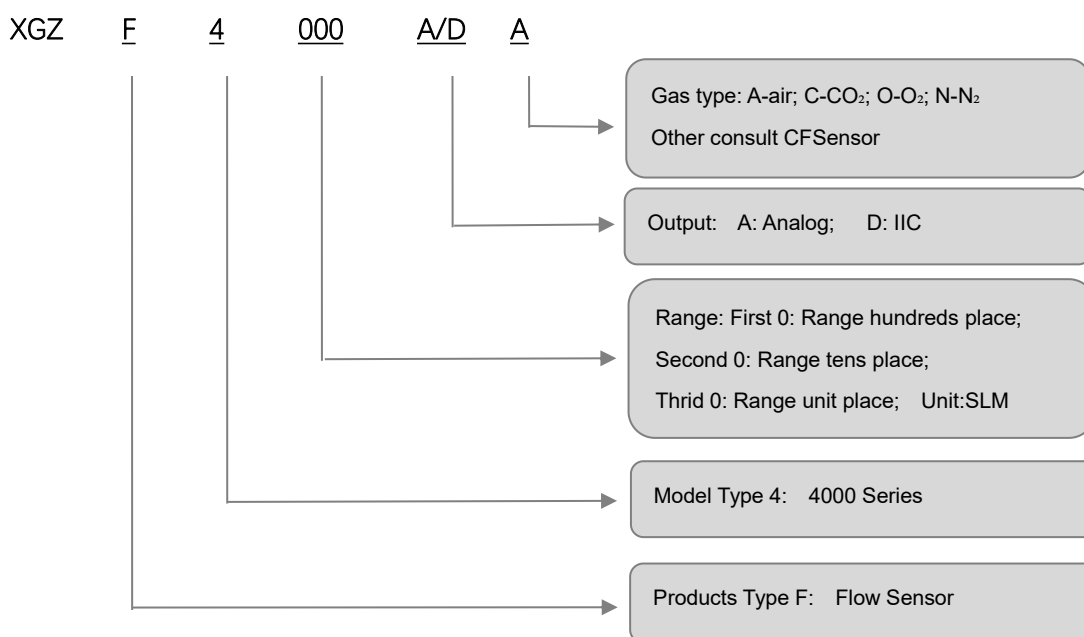
## PIN CONNECTION&DEFINITION



2.54mm 5 Pin Dubond Latch Connector

Analog output PIN&Colour Definition				
1	2	3	4	5
Vout	VDD	GND	NC	NC
Yellow	Red	Black	NC	NC
Digital output PIN&Colour Definition				
1	2	3	4	5
NC	VDD	GND	SDA	SCL
NC	Red	Black	Yellow	Green

## ORDER GUIDE



Test Condition: VIN=12±0.01VDC, Ta=25°C, RH: 40%<RH<60%			
	Range	Unit	Max.Flow Speed (m/s)
XGZF4012A	0-12	SLM	0.527
XGZF4020A	0-20	SLM	0.877
XGZF4035A	0-35	SLM	1.535
XGZF4050A	0-50	SLM	2.193
XGZF4100A	0-100	SLM	4.387
XGZF4150A	0-150	SLM	6.58
XGZF4200A	0-200	SLM	8.773
XGZF4300A	0-300	SLM	13.16
XGZF4500A	0-500	SLM	35.5
Integral Materials	Silicon carbide, epoxy resin, polyphenylene sulfide (PPS), FR4, sealing silicone		

1. Customizable range between 0 ~ 500 SLM
2. SLM: Standard liters per minute. Standard conditions: 20°C, 101.325 KPa
3. Customized two-way airflow test, analog output, F(min)—F(max) corresponds to 1-5 V or 0.5-4.5 V output, and 0 flow corresponds to 3V or 2.5V
4. If you need to order digital output products, replace the selection "A" with "D"

1. Unidirectional(One-way) airflow method: (calculation formula)

XGZF4200-A-A

Flow rate= $[(V_{out} - 0.5 V)/4 V] \times \text{full scale flow rate}$

For example: XGZF4200-A-A, when reading the output voltage 2.5V,

The instantaneous flow rate is  $[(2.5V - 0.5V)/4V \times 200\text{SLM}] = 100 \text{ SLM}$

XGZF4200-D-A

Flow rate= $[(\text{output reading} - 6554)/50461] \times \text{full scale flow rate}$

For example: XGZF4200-D-A, when reading output 10000,

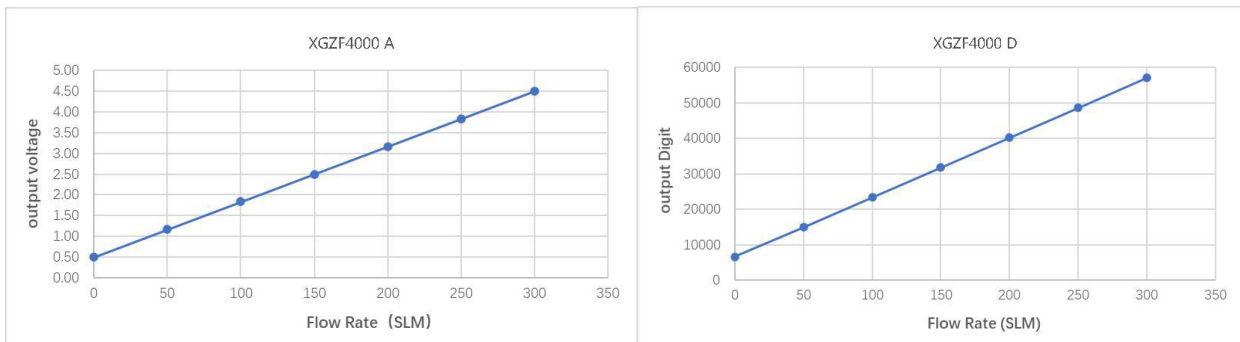
The instantaneous flow rate is  $[(10000 - 6554)/50461] \times 200\text{SLM} = 13.66 \text{ SLM}$

2. Bidirectional(Two-way) airflow mode: (calculation formula)

Forward flow= $[(V_{out} - 2.5 V)/2 V] \times \text{full scale flow}$

Reverse flow= $[(2.5 V - V_{out})/2 V] \times \text{full scale flow}$

## OUTPUT CRUVE



## I2C PROTOCOL

The I2C protocol is a standard protocol for information exchange between IC or functional units; the I2C bus uses a data line (SDA) and a clock line (SCL) to complete the data transmission and the expansion of peripheral devices. The I2C bus has three data transmission speeds: standard, fast mode and high-speed mode. The standard is 100Kbps, the fast mode is 400Kbps, and the high-speed mode supports speeds as fast as 3.4Mbps.

### Read Primary Data

Byte#		0								
Send By Master		OxA1								
	S	1	0	1	0	0	0	0	1	A
		Address (Ox50)								R

Byte#	0		1		2		3		4		
Receive From	CRC	A	High Byte	A	Low Byte	A	High Byte	A	Low Byte	A	P
Slave	Check sum		Calibrated data				Calibrated temperature				

- S :start bit
- P :stop bit
- A: ACK
- W: iic write mode
- R: iic read mode
- Length= 5 bytes to read

## OPERATION NOTES

1. The product can be used normally only when it is suitable for the environment defined in this specification
2. Pay attention to the gas flow direction sign during installation, and the connection and leak detection should be carried out in accordance with the corresponding regulations.
3. During the use of the product, it is prohibited to install pipelines, clean pipelines or other improper operations that introduce a large amount of impurities at the same time; it may cause damage to the product.
4. If the gas medium contains water vapor and impurities, it may cause the sensor's sensitivity characteristics to decrease or damage.
5. Pay attention to the positive and negative poles of the power supply. If the positive and negative poles are connected reversely, the internal circuit of the sensor will be burned out and the normal use of the product will be affected.

## 【 SAFETY NOTES 】

Using these sensors products may malfunction due to external interference and surges, therefore, please confirm the performance and quality in actual use. Just in case, please make a safety design on the device (fuse, circuit breaker, such as the installation of protection circuits, multiple devices, etc.), so it would not harm life, body, property, etc even a malfunction occurs.

To prevent injuries and accidents, please be sure to observe the following items:

- The driving current and voltage should be used below the rated value.
- Please follow the terminal connection diagram for wiring. Especially for the reverse connection of the power supply, it will cause an accident due to circuit damage such as heat, smoke, fire, etc.
- In order to ensure safety, especially for important uses, please be sure to consider double safety circuit configuration.
- Do not apply pressure above the maximum applied pressure. In addition, please be careful not to mix foreign matter into the pressure medium. Otherwise, the sensor will be discarded, or the media will be blown out and cause an accident.
- Be careful when fixing the product and connecting the pressure inlet. Otherwise, accidents may occur due to sensor scattering and the blowing out of the media.
- Because the sensor PIN is sharp, please be careful not to hurt your body when using it.

### 【 WARRANTY 】

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