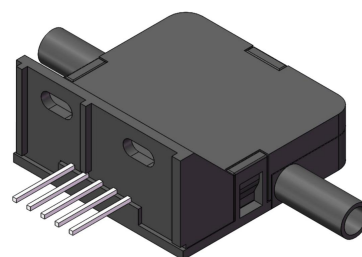


## XGZF3000 AIR FLOW SENSOR

### FEATURES

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- Low flow measurement up to 3000SCCM
- High sensitivity
- 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
- Affordable cost



### 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 XGZF3000 series measures the flow of gases in flow channels according to the thermodynamic principle and is capable of measuring non-corrosive gases such as air, oxygen and nitrogen with high accuracy. The built-in MEMS thermal sensor chip and high performance CMOS microprocessor, combined with a unique calibration program, can output real-time accurate flow signals.

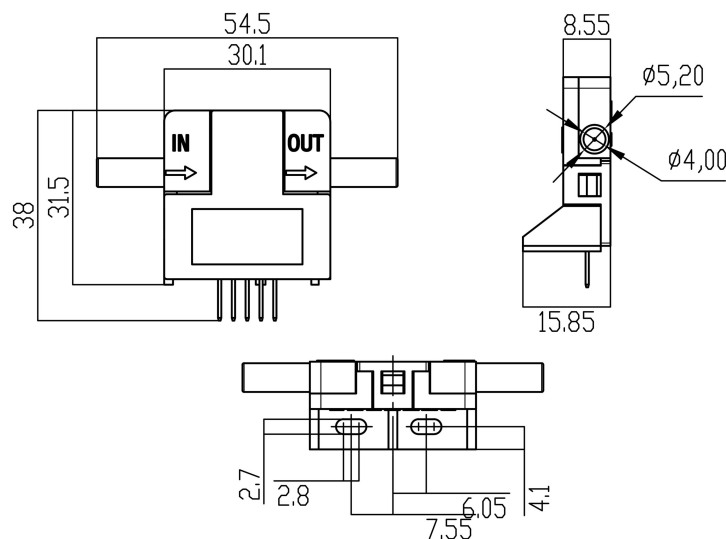
## ELECTRONIC PERFORMANCE

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

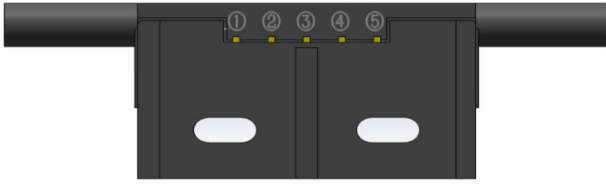
Specifications		Min.	Typ.	Max	Unit
Accuracy	$\leq 1000\text{SCCM}$	-	-	$\pm 1.5$	%FS
	$> 1000\text{SCCM} \& \leq 2000\text{SCCM}$	-	-	$\pm 2.5$	
	$> 2000\text{SCCM}$	-	-	$\pm 3.5$	
Offset Drift		-	0.2	-	%FS
Resolution		-	0.1	-	%FS
Range <sup>①</sup>		0~100/200/300/400/500/600/1000/1500/2000/3000			SCCM
Analog Output <sup>②</sup>		0.5		4.5	V
Clock Pulse Frequency <sup>③</sup>			-	100	KHz
Input Voltage(Low Level) <sup>④</sup>		-	-	0.5	
Input Voltage(High Level) <sup>④</sup>		4	-	5.5	
Output Voltage(Low Level) <sup>④</sup>		-	-	0.5	
Output Voltage(High Level) <sup>③④</sup>		4	-		
Working Voltage		8	12	24	V
Working Current					
Working Pressure		-	-	0.2	Mpa
Working Temp.		0	-	50	$^{\circ}\text{C}$
Storage Temp.		-20	-	85	$^{\circ}\text{C}$
Electronic Interface		2.54mm -5 PIN			
Materials		Silicon, epoxy resin, nylon resin (PA66) + glass fibre (GF), FR4			$^{\circ}\text{C}$

- ① Range 0 - (100 to 3000SCCM) customizable
- ② This specification is for analogue output only, other output voltages(eg.1-5V) are available on request
- ③ This specification is for digital output only
- ④ The SDA/SCL is internally pulled up to 5V, no external pull-up resistor is required.

## DIMENSION (Unit:mm)



## PIN CONNECTION&DEFINITION



2.54mm 5 Pin Dubond Latch Connector

### Analog Output PIN Definition

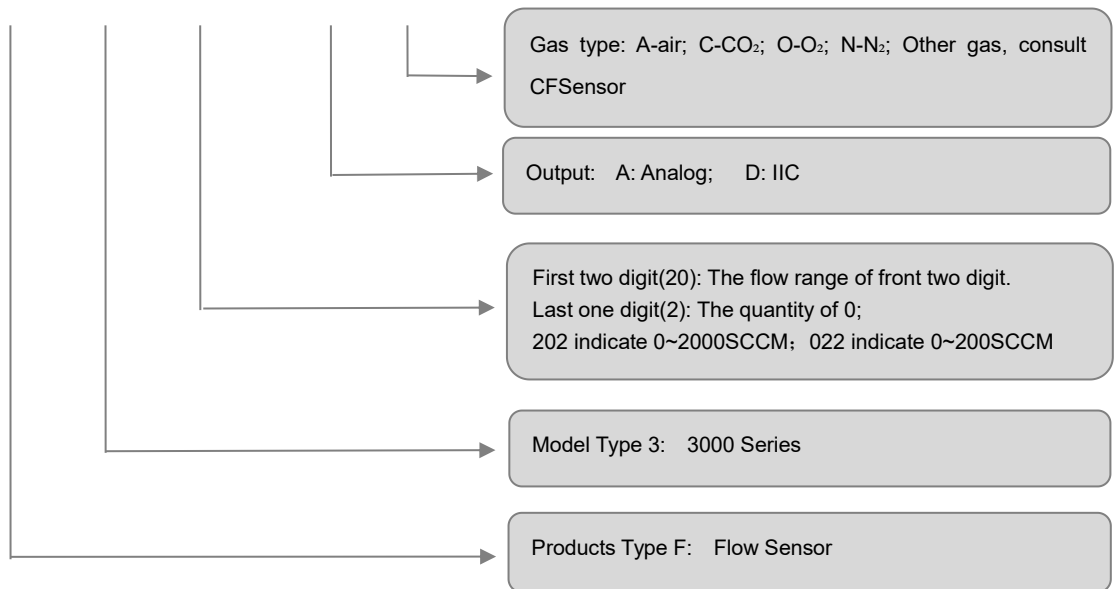
1	2	3	4	5
NC	NC	GND	VIN	Vout

### Digital Output PIN Definition

1	2	3	4	5
SCL	SAD	GND	VIN	NC

## ORDER GUIDE

XGZ F 3 202 A/D A



## RANGE EXAMPLE

Test Condition: VIN=12±0.01VDC, Ta=25°C; RH: 40%<RH<60% Max. Working Temp. Range: -25°C to +85°C

P/N	Range	Unit
XGZF3012	0-200	SCCM
XGZF3022	0-200	SCCM
XGZF3032	0-300	SCCM
XGZF3042	0-400	SCCM
XGZF3052	0-500	SCCM
XGZF3062	0-600	SCCM
XGZF3102	0-1000	SCCM
XGZF3152	0-1500	SCCM
XGZF3202	0-2000	SCCM
XGZF3302	0-3000	SCCM

## FLOW CALCULATION

### Analog Output

XGZF3102-A-A@0.5~4.5 V

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

For example: XGZF3102-A-A, when reading the output voltage of 2.5V, the

Instantaneous flow rate is  $[(2.5V - 0.5V)/4V \times 1000 \text{ SCCM}] = 500 \text{ SCCM}$

### Digital Output

XGZF3102-D-A

Flow rate =  $[\text{I2C output reading}] / \text{proportionality factor K}$

Example: XGZF3102-D-A, when reading output 5055

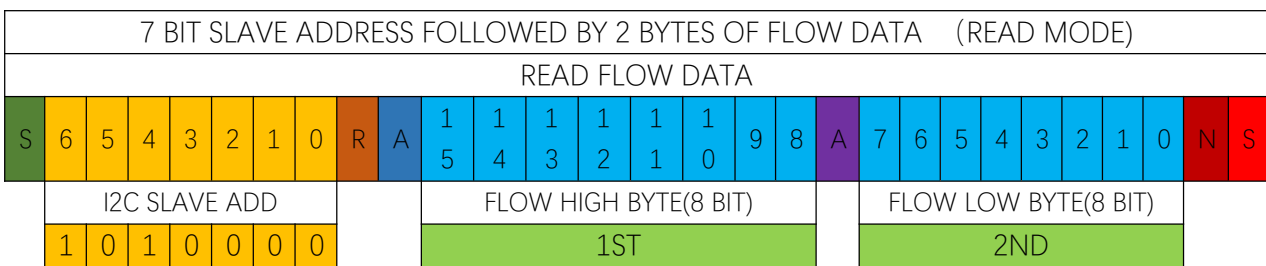
Instantaneous flow rate is  $[5055]/10 = 505.5 \text{ SCCM}$

K Full Scale Range	K
$100\text{SCCM} \leq \text{flow rate} < 500\text{SCCM}$	100
$500\text{SCCM} \leq \text{flow rate} \leq 3000\text{SCCM}$	10

## I2C PROTOCOL

The I2C protocol is a standard protocol for the exchange of information between integrated circuits or functional units; the I2C bus uses a data line (SDA), plus a clock line (SCL) to complete the transmission of data and the expansion of peripheral devices. the I2C bus has three data transmission speeds: standard, fast mode and high speed mode. The standard is 100 Kbps and the fast mode is 400 Kbps (this sensor only supports the standard mode transmission speed). The addressing of the individual nodes is soft addressing, which saves on chip select lines. The standard addressing byte SLAM is 7 bits and can address 127 units. The default I2C address is **0x50**

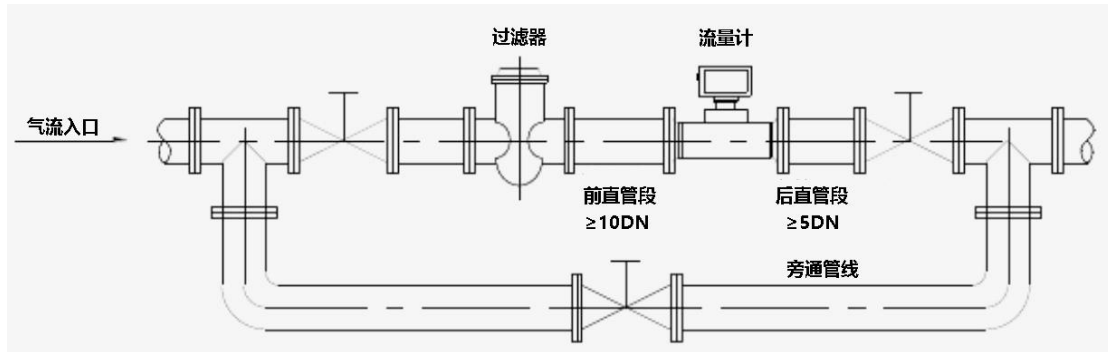
### I2C Read FLOW Data Communication Format



- S : START Condition
- 6 : SLAVE Address Bit
- R : READ Bit(Read=1)
- A : ACK from SLAVE
- 15 : Date Bit
- A : ACK from Master
- N : NACK from Master
- S : STOP Condtlon

The flow data is divided into 2 bytes, the first byte is the high byte of the flow data, the second byte is the low byte of the flow data, the flow data is K (see airflow calculation formula) times the actual flow rate. The default unit of flow data is mL/M (millilitres/minute), for example, when K=100, read the hexadecimal data as 03E8, then convert to decimal current actual flow rate is 10.00mL/M.

## INSTALLATION NOTES



For XGZF3000 series installation, as above show, the recommended pipe length is the first 10 and 5, that is, the inlet pipe length is 10 times the product diameter, and the outlet pipe length is 5 times the diameter; the product is installed concentrically, which is reliable and firm; the airflow direction is consistent with the product indication direction; The pin connection needs to correspond to the product pin definition to ensure correct operation after power on.

## 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 may 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 flow above the maximum applied flow. In addition, please be careful not to mix foreign matter into the flow medium. Otherwise, the sensor will be discarded, or cause an accident.
- Be careful when fixing the product and connecting the gas 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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