AGR12 Pressure Sensor

Key Features

- Measure range: 1kPa ~ 10kPa ~ 40kPa ~ 100kPa
- Gauge pressure sensor
- Suitable for non-corrosive gases
- 5V power supply
- Standard voltage output or proportional voltage output

Application

- Electronic sphygmomanometer, ventilator, oxygen generator, monitor and medical fields
- Tire pressure gauge, power steering, brake power, MAP sensor
- Sports and fitness equipment such as massagers, massage chairs, and air mattresses
- Water heaters, oxygen water machines, beer machines, coffee machines, air pumps, vacuum pumps, pressure instruments, electric breast pumps, vacuum cleaners, etc.

Product Summary

AGR12 pressure sensor adopts a DIP-like package, which is convenient for the insertion and removal of components, and is very suitable for automatic assembly equipment; the two sides of the PCB board are respectively installed with a SOP-packaged pressure sensor and a signal processing circuit chip. Temperature drift and nonlinearity are digitally compensated, and the power supply voltage is used as a reference to generate a calibrated, temperature-compensated standard voltage signal. It is an ideal low-cost, high-precision pressure sensor.

AGR12 pressure sensor is small in size and easy to install. It can calibrate the output signal according to user requirements. It is widely used in medical electronics, automotive electronics, sports and fitness equipment and other fields.

1. Technical Parameters

Power supply: (5±0.25) VDC
Temperature: 25℃

Table 1: Technical Parameters

NO.	Item	Parameters	Unit
1	Output signal	0.5~4.5	V
2	Accuracy *	±2.5	%Span
3	Long-term stability (1 year)	±1.0	%Span
4	Overload pressure	5x (FS≤40kPa)	%FS
5		2x (FS≥100kPa)	
6	Compensation temperature	0 ~ 60	℃
7	Operating temperature	-30 ~ 100	℃
8	Storage temperature	-30 ~ 125	℃

*Note: The accuracy is the comprehensive error, which is composed of the linearity, repeatability, and hysteresis errors of the pressure. The pressure range is different, and the accuracy is different.

2. Electrical Parameters

Table 2. Electrical Parameters

NO.	Item	Mini	Typical	Max	Unit
1	Power supply	4.75	5	5.5	V
2	Working temperature	-30	-	100	℃
3	Work current@25℃	-	4.2	-	mA
4	Filter capacitor	-	100	-	nF
5	Output current load	-	-	5	mA

3. Dimension

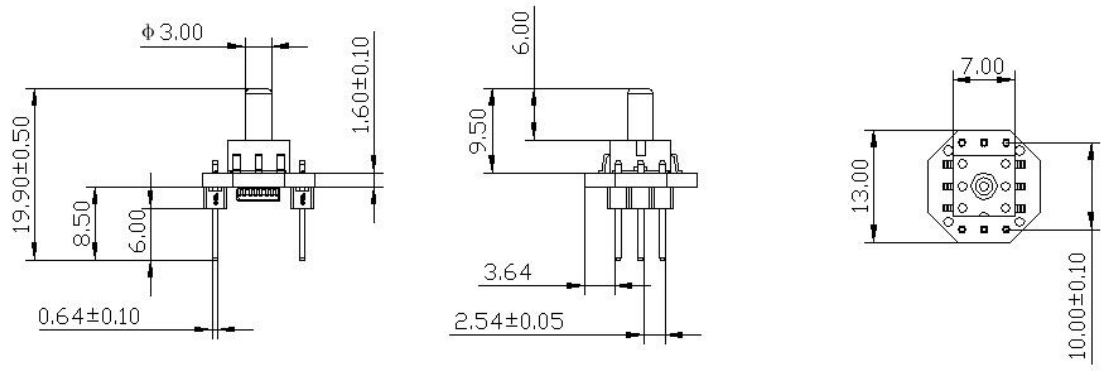


Figure 1. AGR12 dimension(unit: mm, tolerance:±0.20mm)

4. Pin Definition

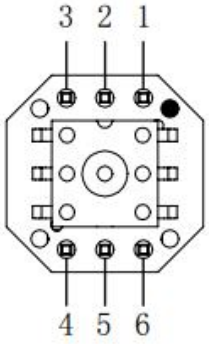


Figure 2. Pin Definition

Table 3. Pin definition

1	2	3	4	5	6
NC	VDD	GND	VDD	OUT	GND
Empty	Power	public	Power	Signal	Public

Note: Do anti-static protection during the welding process

5. Model Overview

AGR 12 100 A 00

- 00: Standard product (00: standard product, 01~99: customized)
- A: Output signal (A: Analog, I: I^2C)
- 100: Pressure range (000~999kPa)
- 12: Sensor Series
- AGR: Pressure Type (AGR: Positive Gauge, AGN: Negative, AGP: Positive Gauge + Negative Gauge)

Note: 1. When selecting a model, please note that the measured medium should be compatible with the part of the product that is in contact with the medium.

2. If you have special requirements on the performance parameters and functions of the product, please consult with our company.

6. Measure Range

Table 4. Measure range and model

Measure range(kPa)	Model NO.
0 ~ 1	AGR12001A00
0 ~ 10	AGR12010A00
0 ~ 40	AGR12040A00
0 ~ 100	AGR12100A00
-1 ~ 0	AGN12001A00
-10 ~ 0	AGN12010A00
-40 ~ 0	AGN12040A00
-100 ~ 0	AGN12100A00
-1 ~ 1	AGP12001A00
-10 ~ 10	AGP12010A00
-40 ~ 40	AGP12040A00
-100 ~ 100	AGP12100A00

7. Output Curve

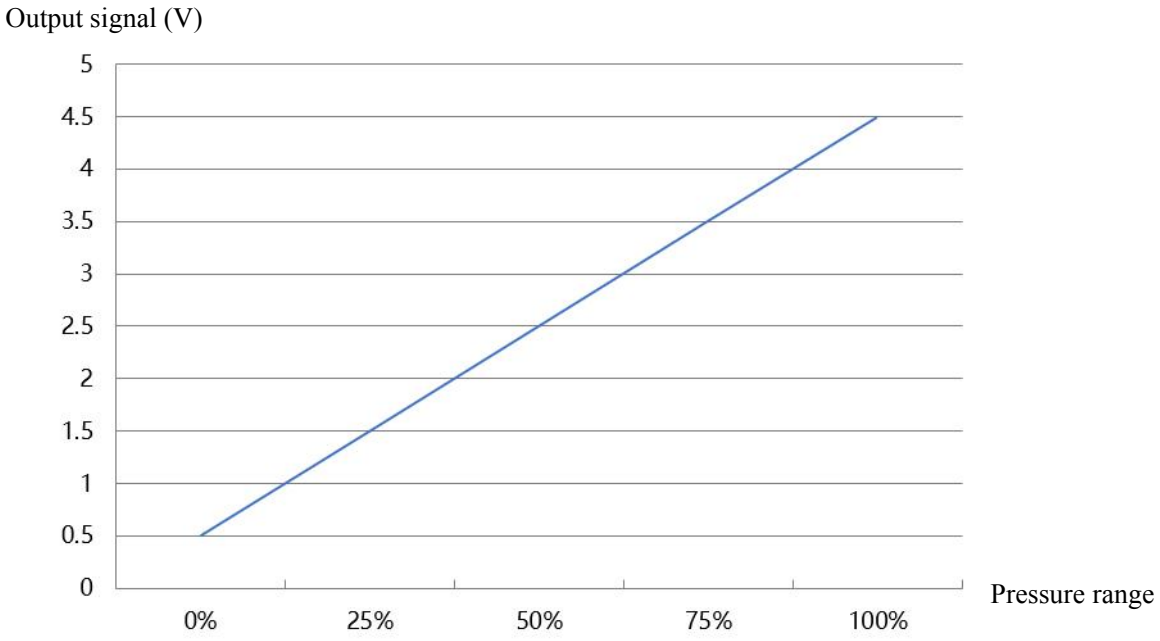
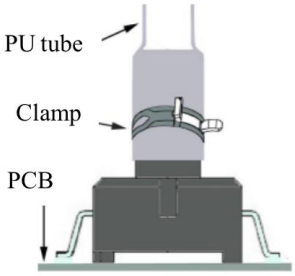


Figure 3. Sensor output curve (power supply: 5VDC)

8. Installation Tips



The following steps are recommended for conducting gas pressure

1. Choose a hose with proper size (inner diameter 2.5mm) and strength
2. If necessary, use a clamp to fix the hose (pressure ≥ 500kPa)
3. Do not block the air inlet
4. Avoid excessive external force operation
5. If you need clamps, please contact the manufacturer

9. Precautions for use

9.1 Welding

Since this product has a small structure with a small heat capacity, please minimize the influence of external heat, otherwise it may cause damage due to thermal deformation and cause changes in characteristics. Please use non-corrosive rosin type flux. Also, since the product is exposed, be careful not to allow flux to penetrate inside.

*Manual welding

- Use a soldering iron with a tip temperature of 260 to 300°C (30 W) within 5 seconds.
- In the case of soldering with a load applied to the terminals, the output may change, so be careful.
- Please clean the soldering iron tip thoroughly

*DIP soldering

- Work within 5 seconds in a DIP solder bath with a temperature of 260 ˚ C or less.
- When mounted on a substrate with a small heat capacity, thermal deformation may occur. So please avoid DIP soldering.

*Correction of welding

- Please complete the correction in one go.
- When correcting lap welding, use a soldering iron with a smooth head shape, and do not apply additional flux.
- Regarding the temperature of the tip of the soldering iron, please use a soldering iron that is below the temperature described in the specifications.

*If excessive force is applied to the terminal, it will cause deformation and impair solderability, so please refrain from dropping the product or using it cumbersomely.

*The warpage of the printed board should be kept below 0.05mm relative to the whole sensor, please manage it.

*After installing the sensor, when cutting and bending the substrate, please be careful not to stress the welded part.

*Since the terminals of the sensor are exposed, if a piece of metal or the like touches the terminals, an output error will occur. Be careful not to touch it with metal pieces or your hands.

*After soldering, when coating is applied to prevent deterioration of the insulation of the substrate, be careful not to allow chemicals to adhere to the sensor.

9.2 Clean

Since the product is an open type, please be careful not to let cleaning fluid penetrate inside.

When cleaning with ultrasonic waves, the product may malfunction, so please avoid cleaning with ultrasonic waves.

9.3 Working environment

*Please avoid using and storing in places where there are corrosive gases (organic solvent gas, sulfurous acid gas, hydrogen sulfide gas, etc.) that have a bad influence on the product.

*This product is not drip-proof, so do not use it in places where it may be splashed with water.

*Do not use in an environment where condensation occurs. In addition, when the moisture attached to the sensor chip freezes, the output of the sensor may fluctuate or be destroyed.

*The output of the chip of the pressure sensor changes when it is exposed to light in terms of structure. Especially when applying pressure through a transparent case, etc., avoid letting light come into contact with the chip of the sensor.

*Please avoid using methods that apply high-frequency vibrations such as ultrasonic waves.

■Please confirm in actual use

Since this specification is a single product specification, in order to improve the reliability in actual use, please confirm the performance and quality in the actual use state.

■Regarding other uses

*The pressure range, if the installation method is wrong, it may cause an accident, so please be careful.

*The only pressure medium that can be used directly is dry air. Other media, especially when used in corrosive gases (organic solvent gas, sulfurous acid gas, hydrogen sulfide gas, etc.) and media containing moisture and foreign matter, may cause failure and damage, so please avoid the above environments use.

*A pressure sensor chip is arranged inside the pressure inlet. Inserting a foreign object such as a needle through the pressure inlet may damage the chip or clog the inlet, so please refrain from doing so. In addition, please avoid blocking the air inlet when using.

*Regarding the operating pressure, please use it within the range of the rated pressure. It will break when used outside the range.

*Since it may be damaged by static electricity, please pay attention to the following when using it.

- When storing, please use conductive material to short-circuit the terminals, or wrap the whole with aluminum foil. Do not use plastic containers for storage and transportation as they are easily charged.
- When using, please ground the charged objects on the table and the operator to discharge the surrounding static electricity safely.

*According to the pressure used, please pay full attention to the fixing and sleeve of the product, and the fixing and selection of the inlet tube. Also, if you have any questions, please contact us.

This product is manufactured using semiconductor parts for general electronic equipment (communication equipment, measuring equipment, machine tools, etc.). Products using these semiconductor parts may malfunction or fail due to external noise and surge, so please check the performance and quality under actual use conditions.

Just in case, please carry out safety design on the device (installation of protective circuits such as fuses and circuit breakers, multiple devices, etc.), so that life, body, property, etc. will not be endangered in the event of malfunction.

To prevent injuries and accidents, 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. In particular, if the power supply is reversed, accidents may occur due to circuit damage such as heat, smoke, or fire, so please be careful.
- In order to ensure safety, especially for important purposes, please be sure to consider the configuration of double safety circuits, etc.
- Do not apply more than the maximum applied pressure. Also, be careful not to allow foreign matter to get into the pressure media. Otherwise, the product may be discarded, or an accident may be caused by blowing out the media.
- Be careful when fixing the product and connecting the pressure inlet. Otherwise, accidents may be caused due to product flying and media blowing out.
- Since the front end of the product is sharp, please be careful not to hurt your body when using it.

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