

XT-194-2

LOW POWER DISSIPATION PRESSURE SENSOR



USER MANUAL

Installation · Operation · Maintenance

1.Overview

The XT-194-2 digital pressure sensor is a digital IIC output pressure sensor designed for users, featuring a built-in temperature compensation sensor that can perform real-time compensation for zero point error, temperature drift, sensitivity error, and non-linearity error of the sensor signal. It outputs pressure and temperature data that comply with the IIC interface protocol. It offers high cost-effectiveness and accurate, reliable measurements. The internal circuit of the sensor adopts anti-static and anti-surge design, greatly enhancing its adaptability in the field. It is suitable for measuring pressure in situations where power consumption requirements are particularly sensitive

2. Performance

Parameter	Min	typical value	Max	Unit	Notes
Pressure Range	0~35Kpa		10	Mpa	
Supply voltage	3	5	5.5	VDC	
Output overall accuracy		±0.1	±0.25	%F.S	@25℃
		±0.3	±0.5	%F.S	-20~80℃
Repetitiveness		≤0.1		%F.S	
Hysteresis		≤0.1		%F.S	
Overload pressure			150	%F.S	
ESD Protection		2000		V	
Storage temperature		-40~125		℃	
Operating temperature		-40~100		℃	
Compensation temperature range		-20~80		℃	
Long-term stability		±0.2		%F.S/year	
Temperature Drift Coefficient	0.01	0.04	0.08	ppm/℃	
Power-on time		80		ms	
I ² C Clock speed		50	400	KHz	
Power dissipation	≤2μA				

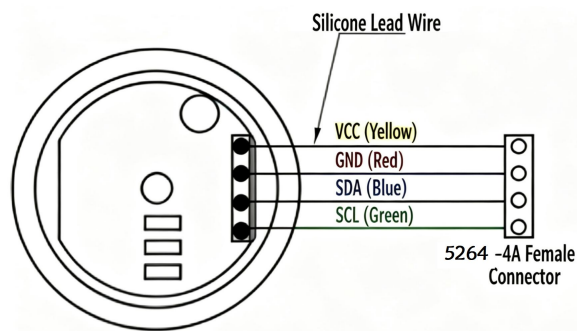
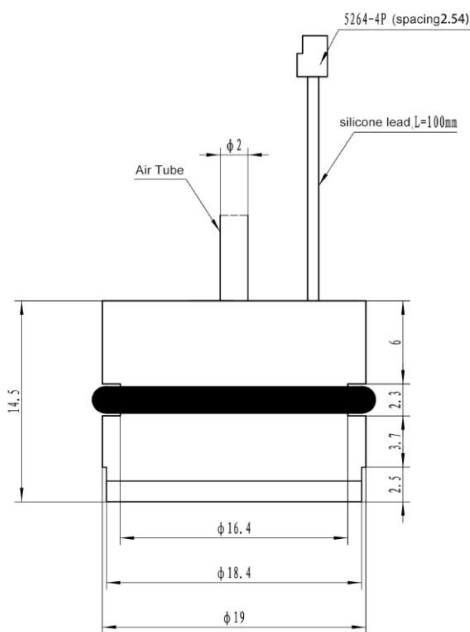
3.Structural Material

- 1) Diaphragm material: 316L
- 2) Shell material: 316L
- 3) Pressure conduit material: 316L
- 4) Sealing ring: Nitrile/Fluororubber
- 5) Net weight: approximately 20g

4.Conditions

- 1) Ambient temperature: $(25\pm1) ^\circ\text{C}$
- 2) Vibration: 0.1g (1m/s) Max
- 3) Humidity: $(50\%\pm10\%) \text{ RH}$
- 4) Environmental pressure: (86-106) kPa

5.Dimensions



I²C Output

Wiring Diagram

No.	Electrical Definition	Line color
1	Power Supply Positive (VCC)	Yellow
2	Power Negative (GND)	Red
3	Data cable (SDA)	Blue
4	Clock Line (SCL)	Green

6.IIC Protocol

The XT-194-1 uses the IIC bus protocol for external communication. The IIC bus uses SCL and SDA as signal lines. Both lines are connected to AVDD via pull-up resistors and remain at a high level when not in communication. The I2C device address of NSA2862 is as follows

A7	A6	A5	A4	A3	A2	A1	W/R
1	1	0	1	1	0	1	0/1

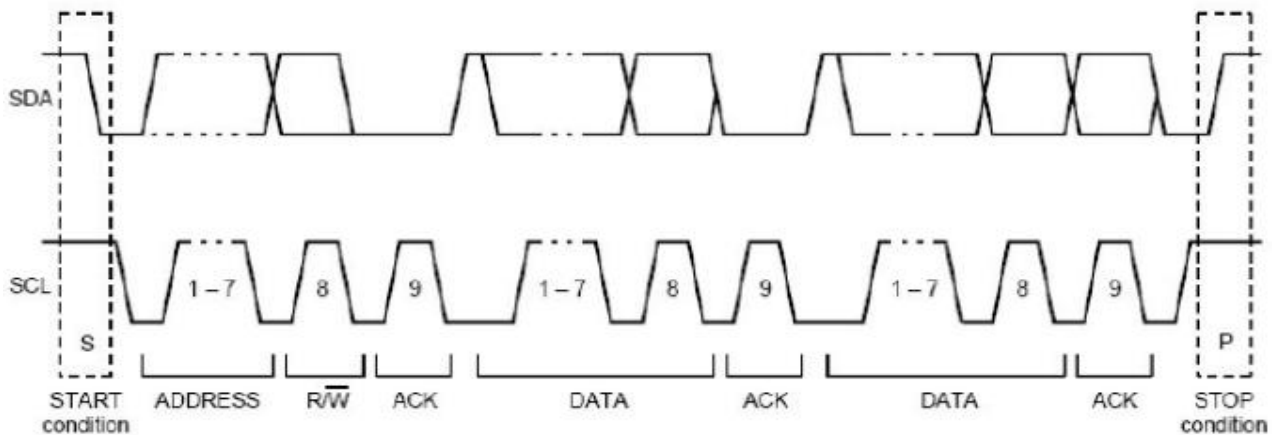
Electrical Characteristics of I2C Communication

Mark	parameter	Minimum value	Maximum	unit
fscI	Clock frequency		400	kHz
tLOW	Clock low pulse hold time	1.3		us
tHIGH	Clock High Pulse Hold Time	0.6		us
tSUDAT	SDA establishment time	0.1		us
tHDDAT	SDA storage time	0.0		us
tSUSTA	Each time the time is set up	0.6		us
tHDSTA	Start condition hold time	0.6		us
tSUSTO	Stop time setup time	0.6		us
tBUF	Time interval between two communications	1.3		us

I2C Communication Description

- 1) The I2C communication protocol has special start (S) and stop (P) conditions. When SCL is at a high level, the falling edge of SDA signals the start of data transmission.
- 2) The master device sequentially sends the address of the device (7 bits) and the read/write control bit. When the device recognizes this address, it generates a response signal and sets SDA low in the 9th cycle.

- 3) After receiving a response from the device, the host continues to send an 8-bit register address, and after receiving a response, it continues to send or read data. SCL is at a high level, and SDA has a rising edge action signal. I2C communication has ended.
- 4) In addition to the start and end markers, when SCL is high, the transmitted data must remain stable. When SCL is small, the value transferred by SDA may change. All data transmission in I2C communication is based on 8-bit units, and a confirmation signal is required after every 8-bit transmission before continuing.

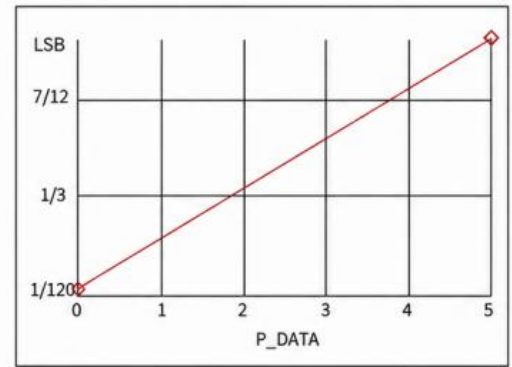
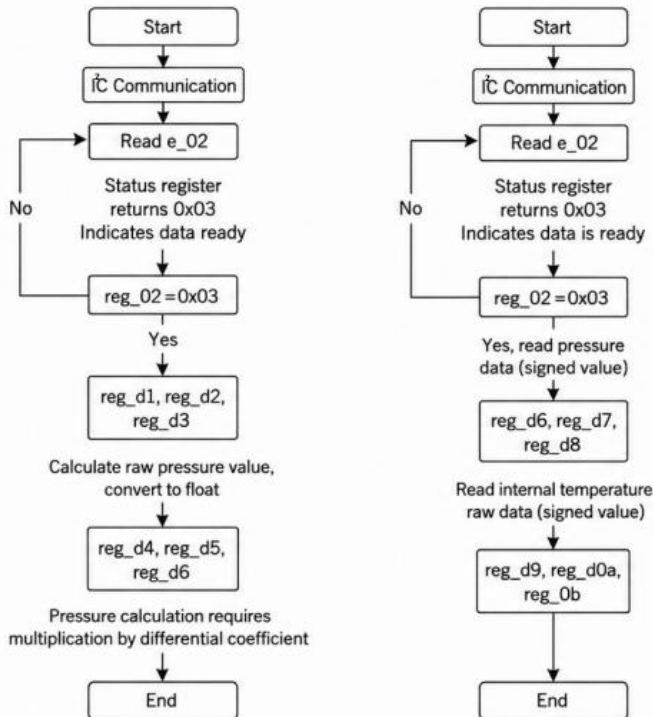


I2C Sequence Diagram

7.Attentions!!

- 1) The outer shell core cavity should be designed with a conical angle as shown in the figure, making it easy to assemble the core. Can prevent right-angle scratches on the sealing ring;
Lubricating oil can be applied to the sealing ring or the assembly joint to facilitate assembly.
- 2) When assembling, pay attention to the dimensional tolerance between the sensor and the inner and outer shells of the base. It is recommended that the cavity be designed with a tolerance of +0.02 to +0.00 relative to the core diameter. 05 processing to achieve the required airtightness.
- 3) During assembly, place it vertically and press down evenly to prevent jamming or damaging the compensation piece.
- 4) The measured medium must be compatible with the material of the core body diaphragm casing (316L); otherwise, special instructions must be provided when ordering.
- 5) Do not press the metal diaphragm with your hand or hard objects to avoid damage to the core due to chip deformation or perforation.
- 6) The ventilation pipe must remain connected to the atmosphere.
- 7) Prevent water, water vapor, or corrosive media from entering the reference cavity at the rear of the core.
- 8) Avoid human-caused damage such as drops that may affect parameter changes.

XT-194-2 I²C Flowchart ▶



<XT-194-2 I²C Pressure Value Calculation>

8.Warranty

From the date of delivery within a year, the company has quality defects caused by material and technology problem free replacement or repair of product; product failure caused by the use of the process of non quality reasons, the company responsible for the repair, only charge the cost of the material.

Please use the machine comply with the User Manual

For any services or technical supports, please contact XYT SENSOR team



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METER

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