WNK81TP temperature and pressure integrated sensor

Temperature and pressure are the most extensive physical parameter that need to be measured.

In many industrial occasions or equipment, the temperature and pressure values are generally read through separate measurement methods.it requires a separate hole in the pipeline or equipment to install the transmitter, causing inconvenience and increasing costs.

Traditional measurement methods have high

Therefore, there is an increasing demand for sensors that can measure temperature and pressure simultaneously.

WNK81TP integrates temperature and pressure measurement in the one sensor, which saves the material cost of the sensor and is convenient for users. It also brings convenience to field installation.

Application

WNK81TP series temperature and pressure integrated sensor solves the following measurement problems:

•Temperature and pressure measurement of gases, vapors or liquids in various fields;
•Liquid level, volume or mass measurement and temperature measurement;
•Can be integrated into various user-defined solutions;
•Smart water, smart gas, smart fire, automotive electronics, air compressors, air conditioning refrigeration, pumps, valves, etc.

Features

• Dedicated high-performance ASIC conditioning circuit;
• High stability silicon oil-filled pressure sensor;
• 316L diaphragm;
• Built-in PT100 temperature sensor;
• Adapt to polluted and corrosive environments (compatible with 316L);
• Meet various field interface requirements;
• Respond quickly and without lag;
• Wide operating temperature range;
• 0.5 ... 4.5V, 4 ... 20mA analog output or I2C digital output + PT100;
• Accurate, stable and reliable;

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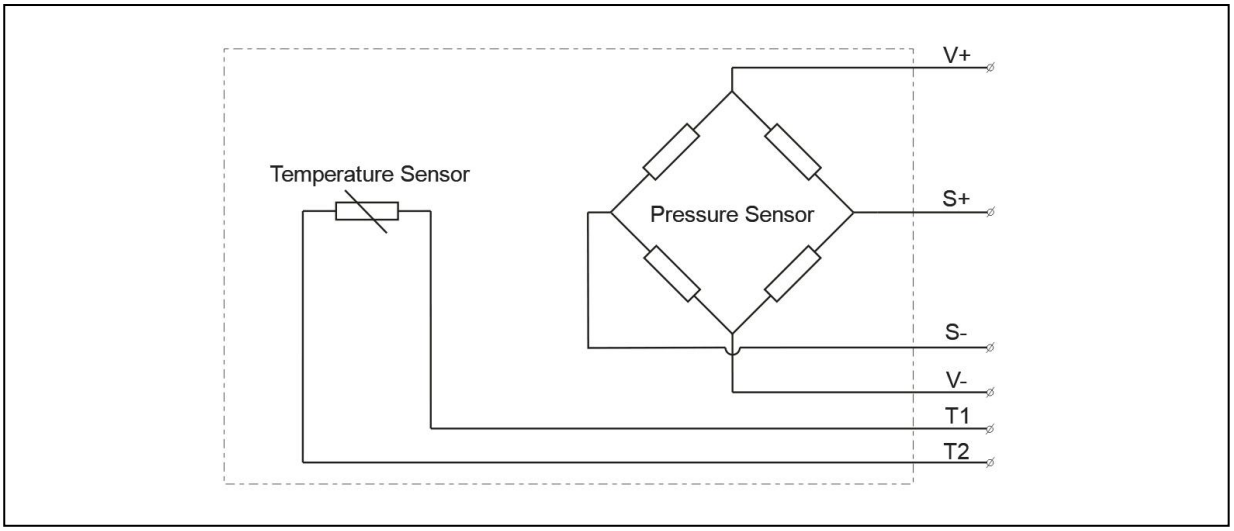
Measurement principle



The pressure sensor has excellent stability and accuracy. With ASIC dedicated signal conditioning circuit, temperature compensation can be performed in the range of -40 to 125 ° C, which improves the accuracy of the sensor.

WNK81TP series temperature and pressure sensor is composed of high precision silicon pressure sensor and PT100 temperature sensor.

A high-precision PT100 temperature sensor is embedded in the pressure sensor's stainless steel housing base, and a thermally conductive glue is potted in the gap.It will greatly reduce the hysteresis of temperature conduction when the PT100 sensor is not in contact with the measurement medium.

WNK81TP is committed to providing new measurement methods, saving material costs of sensors, and convenient for customers.

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Specification

Performance

Input		
Measurement	Gauge pressure,absolute pressure	
Range	0 ~40Kpa ~7Mpa / 0 ~0.4bar ~70bar	
Output		
Analog signal	0.5…4.5V、4…20mA	+PT100
Digital signal	I^2C	
Accuracy		
Pressure output		
0.5%	Linearity, hysteresis, repeatability: <± 0.5% of sensor full scale	
0.2%	Linearity, hysteresis, repeatability: <± 0.2% of sensor full scale	
Temperature output		
PT100B 级	Resistance error at zero degrees ± 0.12%; temperature error ± 0.30 + 0.005T (℃); Temperature coefficient TCR error 0.003851±0.000012（ohm/ohm/℃）	
Thermal effect		
Temperature compensation range	-10…70℃, Special requirements can be negotiated	
Temperature effect		
0.5%fs	In the range of temperature compensation, the lower limit value and full scale value are less than ± 1% of the full scale of the sensor	
0.2%fs	In the range of temperature compensation, the lower limit value and full scale value are less than ± 0.5% of the full scale of the sensor	
Housing material	SST 304	
Protection	IP65/IP67	

Power

Power supply	5V \ 24VDC DC regulated power supply
Effect of supply voltage	Influence of 5V supply voltage: min.3V / max.5.5V ● 0.5 ... 4.5V voltage output sensor has no effect on linearity, is proportional to the lower range limit and full scale value, and has no effect on temperature compensation. ● I2C digital output sensor has no effect on linearity, lower range and full-scale values, and temperature compensation. Influence of 24V power supply voltage: min.9V / max30V ● 4 ... 20mA current output type sensor has no effect on linearity, lower range and full scale value, temperature compensation.

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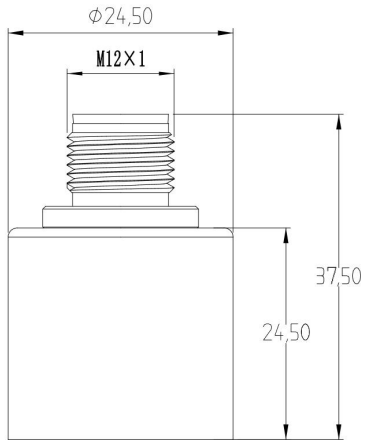
Operating condition

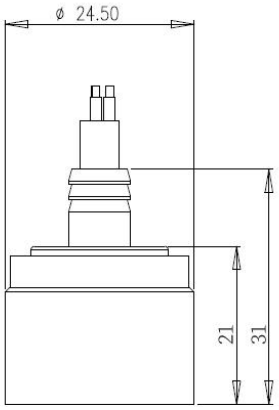
Ambient temperature	-40~125℃，
Storage temperature	-45~125℃，

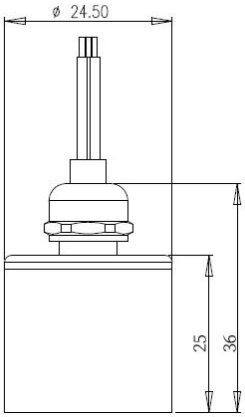
Temperature

Temp（℃）	-50	0	50	100	150
Resist（Ω）	80.31	100	119.4	138.51	157.33

Electrical connector

<table>
<tr><td>M12×1</td><td>Cable output A</td><td>Cable output B</td></tr>
<tr><td> 

unit：mm</td><td> 

unit：mm</td><td> 

unit：mm</td></tr>
<tr><td>C1</td><td>C2</td><td>C3</td></tr>
<tr><td colspan="3">1、 Current output：4 wire
2、 Voltage output：5 wire
3、 I²Cdigital output ： 6 wire</td></tr>
</table>

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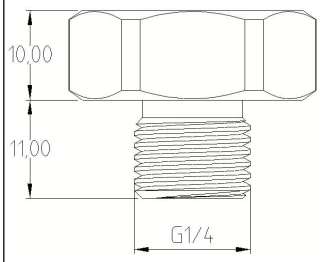
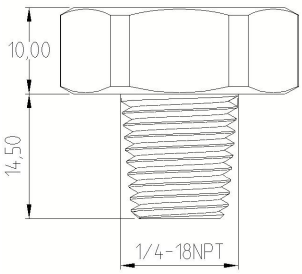
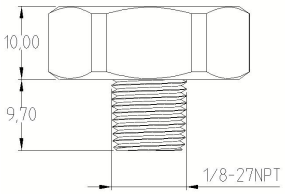
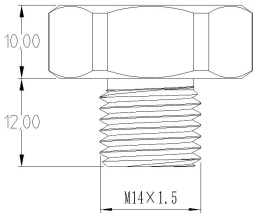
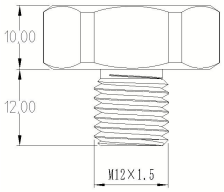
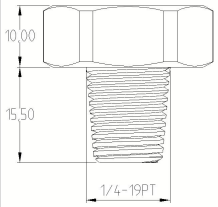
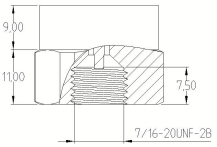
Process connection

Thread	G1/4	1/4-18NPT	1/8-27NPT
Unit in mm Hexagon is 25 mm			
Code	P1	P2	P3

Thread	M14×1.5	M12×1.5	1/4-19PT	7/16-20UNF
Unit in mm Hexagon is 25 mm				
Code	P4	P5	P6	P7

Order code

Model	Description
WNK81TP	Temp-pressure sensor
Code	Pressure type
A	Absolute pressure
G	Gauge pressure
Code	Measure range
A	0.4bar
B	1.6bar
C	4 bar
D	10 bar
E	25 bar
F	40 bar

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G	70 bar
H	Special to be costomized
Code	Output
1	0.5…4.5V ＋ PT100
2	4…20mA ＋ PT100
3	I^2C ＋ PT100
4	Costomized
Special to be costomized	
Code	Electrical connector
C1	M12×1P
C2	Cable output A（ Please advise the required cable length, such as 10 for 1 meter ）
C3	Cable output B（ Please advise the required cable length, such as 01 for 1 meter ）
Code	Process connection
P1	G1/4
P2	1/4-18NPT
P3	1/8-27NPT
P4	M14×1.5
P5	M12×1.5
P6	1/4-19PT
P7	7/16-20UF(female)
P8	Costomized
Special to be costomized	
Typical model code：WNK81TP GB2 C1 P1 WNK81TP GB2 C310 P1_____C310 cable length 1 meter	

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