



# General Type Isolation-Film Pressure Sensor

**(Model No. WPAK63J)**

**Manual Version: 1.0**

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Zhengzhou Winsen Electronics Technology CO., LTD

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Please keep the manual properly, in case you need help during the usage in the future.

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## WPAK63J General Type Isolation-Film Pressure Sensor

### Product Description

WPAK63J series is a pressure core encapsulated by high precision imported diffused silicon pressure sensitive chip and mature manufacturing technology. It is the core component for manufacturing pressure sensor and pressure transmitter. As a high performance pressure sensitive element, it can be easily amplified signal and integrated to a transmitter with standard signal output.

WINSEN Elec can undertake special customization according to the needs of users, such as full welded structure, wide temperature compensation, customized shape, high reliability, strong impact and vibration resistance pressure sensors, to provide reliable solutions for a variety of applications.



Picture 1: Sensor

### Main features:

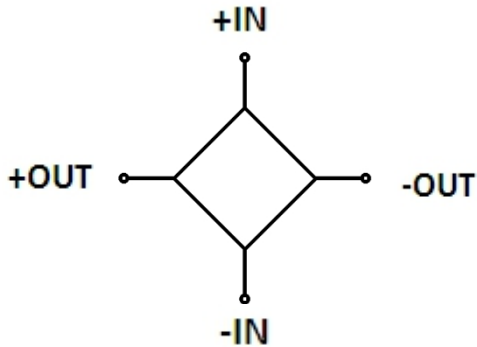
- $\Phi 19\text{mm}$  standard OEM pressure core, strong interchangeability with similar products at home and abroad
- All stainless steel 316L package, anti-erosion
- wide temperature compensation  $-10\sim+70^{\circ}\text{C}$
- Constant current
- Normalized output available
- Glue-filled and moisture-proof circuit board

### Application:

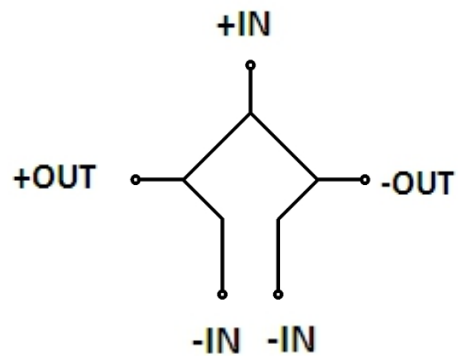
- Process control system
- Pressure calibration instrument
- Hydraulic system
- Biomedical instruments
- Hydraulic system and valve
- Liquid level measurement
- Military equipment
- Refrigeration equipment and HAVC system
- Ships and navigation
- Aircraft and Avionics Systems

## Equivalent circuit diagram

(1) Four wire (compensation)



(2) Five wire (uncompensated)



## Technical parameters

Detection range	-100kPa~0~10kPa...100MPa	
Pressure Reference	Gauge Pressure/Absolute Pressure/Sealed Gauge Pressure	
Power supply	1.5mA	
input resistance	2kΩ~5KΩ;	
Electrical Connection	Pin or Wiring	
Compensation Temperature	0℃~60℃、-10℃~70℃	≤35kPa: 0℃~60℃, >35kPa: -10℃~70℃
Working Temperature	-40℃~120℃	
Storage Temperature	-40℃~125℃	
Insulation resistance	≥200MΩ/250VDC	
Response Time	≤1ms	Up to 90%FS
Measuring Medium	Liquid and Gas	
Mechanical vibration	20g (20~5000HZ)	
Shock Resistance	100g (10ms)	
Lifespan	10×10 <sup>6</sup> (Pressure Cycle)	

Structural Performance Index	
Diaphragm material	316L
Housing Material	316L
Infused Liquid	Silicone oil
Seal Ring	NBR or FKM

Basic parameter index						
Item	Condition	Min	Special	Max	Unit	Remarks
Non-linear		-0.3	±0.25	0.3	%FS	Note(1)
Hysteresis		-0.05	±0.03	0.05	%FS	
Repeatability		-0.08	±0.03	0.08	%FS	
Zero Point Output		-2	1	2	mV	
Full-Range Output	100kPa	20	30	60	mV	Note(2)
	other range	50	90	120		
Zero Point Temperature Drift		-1.5	±0.75	1.5	%FS	Note(3)
Sensitivity drift		-1.5	±0.75	1.5	%FS	Note(3)
Heat Hysteresis		-0.075	±0.05	0.075	%FS	Note(4)
Stability		-0.3	±0.2	0.3	%FS/Year	

Notes:

- (1) Based on BFSL least square method.
- (2) Full range output of products with customized detection range is not include .
- (3) In temperature r compensation ange, 0°C ~ 60 and -10°C ~ 70°C is refer to 30°C; -20°C ~ 85°C is refer to 32.5°C.
- (4) After high and low temperature, return to the reference temperature.

**Dimension**

Gauge pressure 20kPa~3MPa	Absolute pressure/Sealing Pressure < 25MPa	Sealing Pressure ≥25MPa

**Electrical Connection (Unit :mm)**

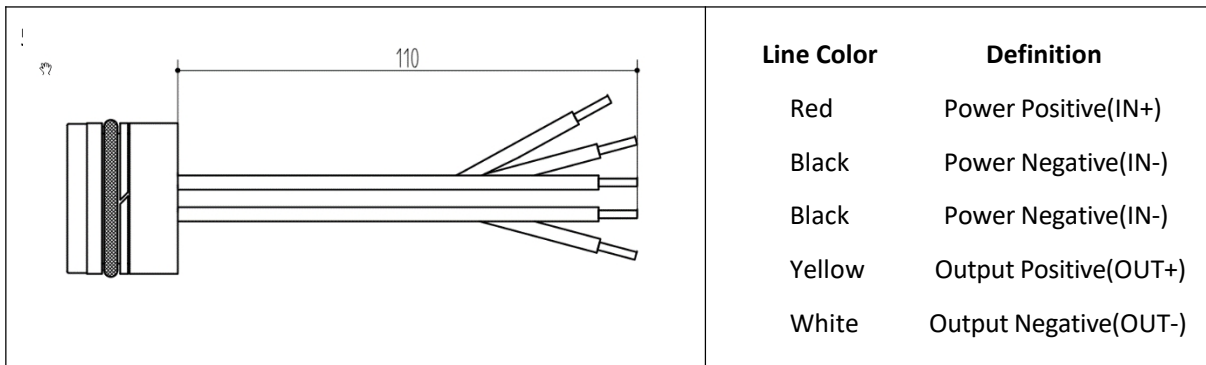
**6-Pin Lead-out**

	<table border="1"> <thead> <tr> <th>Pin</th> <th>Definition</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Power Negative(IN-)</td> </tr> <tr> <td>2</td> <td>Output Positive(OUT+)</td> </tr> <tr> <td>3</td> <td>Power Positive(IN+)</td> </tr> <tr> <td>4</td> <td>Output Negative(OUT-)</td> </tr> <tr> <td>5</td> <td>NC</td> </tr> <tr> <td>6</td> <td>Power Negative(IN-)</td> </tr> </tbody> </table>	Pin	Definition	1	Power Negative(IN-)	2	Output Positive(OUT+)	3	Power Positive(IN+)	4	Output Negative(OUT-)	5	NC	6	Power Negative(IN-)
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**4-Line Lead-out**

	<table border="1"> <thead> <tr> <th>Line Colour</th> <th>Definition</th> </tr> </thead> <tbody> <tr> <td>Red</td> <td>Power Positive(IN+)</td> </tr> <tr> <td>Black</td> <td>Power Negative(IN-)</td> </tr> <tr> <td>Yellow</td> <td>Output Positive(OUT+)</td> </tr> <tr> <td>White</td> <td>Output Negative(OUT-)</td> </tr> </tbody> </table>	Line Colour	Definition	Red	Power Positive(IN+)	Black	Power Negative(IN-)	Yellow	Output Positive(OUT+)	White	Output Negative(OUT-)
Line Colour	Definition										
Red	Power Positive(IN+)										
Black	Power Negative(IN-)										
Yellow	Output Positive(OUT+)										
White	Output Negative(OUT-)										

5-Line Lead-out



Detection Ranges

Detection Range					
Range Code	Pressure Type	Detection Range	Overload Pressure	Burst pressure	OType Circle
20k	G	0~20kPa	300% FS	600% FS	NBR
35k	G、A	0~35kPa	300% FS	600% FS	NBR
70k	G	0~70kPa	300% FS	600% FS	NBR
100k	G、A	0~100kPa	200% FS	500% FS	NBR
250k	G、A	0~250kPa	200% FS	500% FS	NBR
600k	G、A	0~500kPa	200% FS	500% FS	NBR
1M	G、A、S	0~1MPa	200% FS	500% FS	NBR
1.6M	G、A、S	0~1.6MPa	200% FS	500% FS	NBR
2.5M	G、A、S	0~2.5MPa	200% FS	500% FS	NBR
6M	S	0~6MPa	200% FS	400% FS	FKM
10M	S	0~10MPa	200% FS	400% FS	FKM
16M	S	0~16MPa	200% FS	400% FS	FKM
25M	S	0~25MPa	150% FS	400% FS	FKM
40M	S	0~40MPa	150% FS	300% FS	FKM
60M	S	0~60MPa	150% FS	300% FS	FKM
100M	S	0~100MPa	150% FS	300% FS	FKM

## Cautions

- The detection range should be within  $\pm 30\%$  FS for over range or down range application,.
- The pressure types includes gauge pressure, absolute pressure and sealing pressure.
- Please confirm the system's max overload. The maximum overload of the system should be less than the overload protection limit of the sensor, otherwise it may reduce the lifespan or bring damage to the core .
- Do not touch the diaphragm with any hard objects, it may break the diaphragm.
- The material and manufacturing process of the negative pressure core are different from the positive pressure core, the gauge pressure core cannot be used to replace the negative pressure core.
- Please carefully read the manual before installation, to avoid damage to the product caused by wrong installation.
- Incorrect may cause danger and personal injury.
- When pulling out the core from the shell, do not pull the wire and pin.

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