

# EST350 Piezo-Resistive Differential Pressure Transmitter

## Product Introduction

EST350 is kind of differential pressure transmitter, based on the piezo-resistive measuring principle, the sensing element is a diffused silicon piezoresistive differential pressure sensor ESS320, with a stainless steel 316L isolation diaphragm. The reliable performance of the DP sensor is due to temperature compensation and aging screening. It enables zero and full scale to be adjusted externally.

EST350 uses highly reliable silicon piezoresistive differential pressure sensors and other core sensitive components which undergo temperature compensation, digital circuit correction, and signal conditioning to output standard industrial signals.

Each model in this series is meticulously designed, with component selection, process validation bonding, cyclic loading for stress relief, aging, and environmental simulation testing to ensure stability and reliability of every product.



## Highlight Features

- **Pressure Type:** Differential Pressure
- **Range:** 0-0.1Mpa-3.5Mpa/①; 0-20Kpa-100Kpa/②  
0-2Kpa-50Kpa/
- **Accuracy:**  $\pm 0.25\%F.S/①$ ,  $\pm 0.5\%F.S/②$
- **Stability:** 0.1%F.S/Year (typical) , 0.2%F.S/Year (maximum)
- **Medium Temperature:**  $-40^{\circ}C \sim 80^{\circ}C$
- **Signal Output:** 4~20mA, RS485, 0~10V, 1~5V
- **Power Supply:** 12~30Vdc/ac,
- **Sensing:** Diffused Silicon Oil Filled system
- Anti-EMI and Lightening Protection
- **Ingress Protection:** IP65/IP67

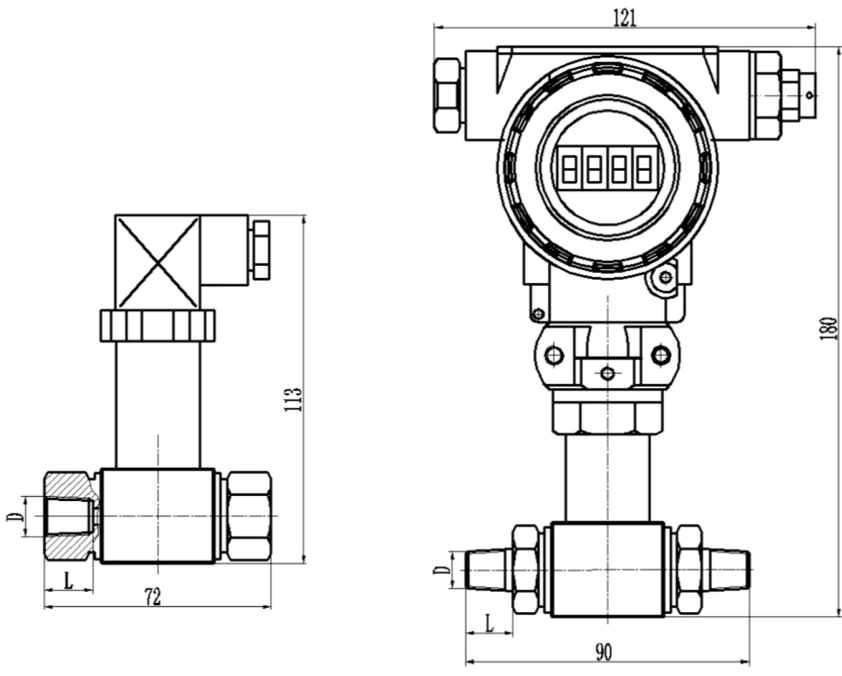
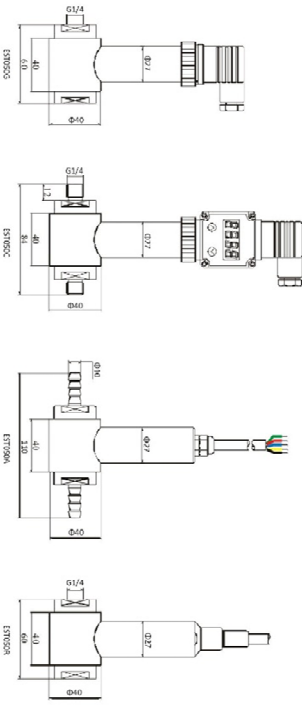
## Electrical Connections and Dimensional Drawings

Electrical Specification			
Current Type(2-wire)		4-20mA	12V-30VDC
Voltage Type (3-wire)		0-5V	6V-24VDC
		0-10V	12V-30VDC
I2C(4-wire)		I2C	3.3V-5VDC
RS485 (4-wire)		RS485	5V-30VDC
<b>Load resistance( <math>\Omega</math> ):</b> Current type(2-wire); $R \leq (U-10)/0.02-RD$ (U: power voltage; RD: Internal resistance of cable)			
<b>Current consumption:</b>			
<ul style="list-style-type: none"> <li>● Current type(2-wire): <math>&lt; 23mA</math></li> <li>● Voltage type (3-wire): <math>&lt; 5mA</math></li> </ul>		<ul style="list-style-type: none"> <li>● I2C(4-wire): <math>&lt; 1.3mA</math> (Optional Low Consumption: <math>&lt; 5 \mu A</math>)</li> <li>● RS485 (4-wire): <math>&lt; 5mA</math> (low consumption 1.1mA)</li> </ul>	
Precision Specification			
Reference Accuracy ( $^{\circ}C$ .)	0.1	0.25	0.5
Non-linearity	$\leq 0.1\%$	$\leq 0.2\%$	$\leq 0.4\%$
Hysteresis	$\leq 0.05\%$	$\leq 0.05\%$	$\leq 0.1\%$

Repeatability	<=0.05%	<=0.05%	<=0.1%
Long-term Stability (%FS)	<=0.1%	<=0.2%	<=0.5%
	<i>Including Linearity Hysteresis+ Repeatability from zero; Square root output accuracy=1.5X of the linear</i>		
Temperature. Drift @ Zero	<=0.01%	<=0.03%	<=0.05%
Sensitivity. Drift @ Zero	<=0.01%	<=0.03%	<=0.05%
<i>Reference Temperature: 20~25 °C; relative humidity: 45%RH~75%RH; Voltage: 24V ±0.24V; 5V ±0.05V</i>			
Environment & Working Conditions			
Compensation Temperature	0°C ~ +50°C ( ≤200kPa ) , -10°C ~ 70°C ( >200kPa )		
Measuring Temperature	-30°C ~ +80°C ( regular type ) / -10°C ~ +70°C (with cable connection )		
Storage Temperature	-40°C ~ +125°C / -20°C ~ +80°C (with cable connection )		
<i>Note: The medium under test freezing can cause irreparable damage to the product; when the pressure transmitter is working normally, the medium under test should not solidify.</i>			
Ingress Protection	IP65 (IP67)		
Atmospheric Pressure	86kPa ~ 106kPa		
Vibration	10g ( @10Hz ~ 2000Hz )		
Shock	100g/11ms		
Life-Span/usage	>10 million load cycles (within the measuring range)		

## Structure Size Outline Dimension (mm)


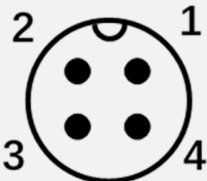
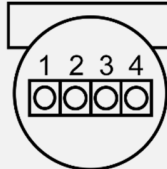
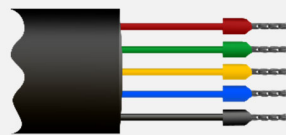
The image below shows the typical product structure. For other shapes and structures, please contact us for customization.

01	02
	

## Process Thread Connection

Type/Dimension	Length	Type/Dimension	Length
M22×1.5	15 mm	M20×1.5	15 mm
M18×1.5	15 mm	M16×1.5	15 mm
M14×1.5	15 mm	M12×1	15 mm
M10×1	12 mm	M8×1	12 mm
G1/2	15 mm	G3/8	15 mm
G1/4	15 mm	G1/8	12 mm
1/2NPT	18 mm	1/2 PT	18 mm
3/8NPT	15 mm	3/8 PT	15 mm
1/4NPT	15 mm	1/4 PT	15 mm
1/8NPT	12 mm	1/8 PT	12 mm

## Electrical Connection

DIN43650	Terminals	Current (2-wire)	Voltage (3-wire)	IIC(4-wire)	RS485(4-wire)
	1	Vcc	Vcc	Vcc	Vcc
	2	Iout	GND	GND	GND
	3	/	Vout	SCL	RS485A
	⊕	PE	PE	SDA	RS485B
Aviation Plug	Terminals	Current (2-wire)	Voltage (3-wire)	IIC(4-wire)	RS485(4-wire)
	1	Vcc	Vcc	Vcc	Vcc
	2	Iout	GND	GND	GND
	3	PE	Vout	SCL	RS485A
	4	/	PE	SDA	RS485B
Industry Terminals Connection	Terminals	Current (2-wire)	Voltage (3-wire)	IIC(4-wire)	RS485(4-wire)
	1	PE	PE	SDA	RS485B
	2	/	Vout	SCL	RS485A
	3	Iout	GND	GND	GND
	4	Vcc	Vcc	Vcc	Vcc
Direct Cable	Colors	Current (2-wire)	Voltage (3-wire)	IIC(4-wire)	RS485(4-wire)
	Red	Vcc	Vcc	Vcc	Vcc
	Green	Iout	GND	GND	GND
	Yellow	/	Vout	SCL	RS485A
	Blue	/	/	SDA	RS485B
	Black	PE	PE	PE	PE

## Ordering Procedure

EST	Differential Pressure Transmitter	
	Code	Model
	350G	Universal
	350E	Intrinsic safety
	350D	Explosion-proof
	350C	+ Display
	350R	Waterproof wire jacket connection
	350H	High temperature with cooling parts
	Code	Test Medium
	A1	Air/gas or another dry medium
	A2	Water/oil/fuel or another liquid medium
	Cod	Span
	R1	0-0.1Mpa-3.5Mpa;
	R2	0-20Kpa-100Kpa
	R3	0-2Kpa-50Kpa (air)
	Code	Output Type
	A	4~20mA
	V	1~5V
	R	RS485
	V2	0~10V
	Code	Precision
	0.25	±0.25%F.S
	0.5	±0.5%F.S
	Code	Power Supply
	DC12	12~30 Vdc
	DC8	8~36 Vdc
	Code	Pressure connections
	M	M20x 1.5
	GF	G1/4 female thread
	G	G1/4 Male Thread
	RG	Φ8 valve
	Code	Electrical Connections
	H	DIN43650 Hochman
	GX	GX16-7
	C	Waterproof wire jacket connection
	CW	Waterproof cable conduit connections
	Code	Cable length XXm=... m
	Code	Packing
	Bb	Bubble bag
	Foa	Plastics foam

EST	350G	A1	R1	A	0.25	DC12	M	H	1.5m	Bb
<b>NOTES:</b>										
<ul style="list-style-type: none"> <li>➤ When choosing a product, please pay attention to the compatibility between the tested medium and the casing. For media compatibility issues, you can consult our company.</li> <li>➤ When choosing a digital display product, the working environment temperature range for the display header is -30 ℃ to 60 ℃, and the product power supply should not be less than 15VDC.</li> <li>➤ Sealing measures are adopted at the interface connection to prevent pressurized liquid leakage, causing pollution or accidents.</li> <li>➤ When used in flammable and explosive, and other dangerous environments, install safety isolation grills as required, and cable wiring needs to be sealed and reliable.</li> <li>➤ Tighten the wiring box cover before powering it to ensure that the inner cavity of the wiring box is isolated from the environment.</li> </ul> <p>When cleaning and overhauling products, the transmitter must be turned off before disassembly. Live operation on-site is strictly prohibited.</p>										

#### Precautions

- *Before use, please read this manual carefully to ensure the correct use of the product and avoid irreparable damage to the transmitter.*
- *Changes in the installation position parallel to the diaphragm surface will not affect zero drift. If the installation position changes more than 90° from the diaphragm surface, there will be a zero-position effect within the range of <math><0.4\text{kPa}</math>. This can be corrected by adjusting the zero calibration without affecting the measurement range.*
- *When cleaning the instrument, please use a cleaning agent that will not damage the instrument surface or sealing ring. When using a pressure cleaner, do not aim the nozzle directly at the electrical connection or vent hole (atmospheric communication position).*
- *The measuring medium must be a gas or liquid that will not corrode stainless steel, otherwise, it needs to be specially customized.*  
*Do not press or clean the pressure hole with your hand or other hard and sharp objects to avoid damaging the chip.*
- *This product is a measuring product, so it should be handled with care and not disassembled. Such damage is not covered by the warranty.*
- *The entry of viscous liquids will affect the measurement accuracy and should be avoided as much as possible.*

#### LIMITED WARRANTY

Seller warrants that the product hereby purchased is, upon delivery, free from defects in material and workmanship and that any such product which is found to be defective in such workmanship or material will be repaired or replaced by Seller (Ex-works, Factory, Xi'an China. INCOTERMS); provided, however, that this warranty applies only to equipment found to be so defective within a period of 18 months from the date of manufacture by the Seller. Seller shall not be obligated under this warranty for alleged defects which examination discloses are due to tampering, misuse, neglect, improper storage, and in any case where products are disassembled by anyone other than authorized Seller's representatives. EXCEPT FOR THE LIMITED WARRANTY OF REPAIR AND REPLACEMENT STATED ABOVE, SELLER DISCLAIMS ALL WARRANTIES WHATSOEVER WITH RESPECT TO THE PRODUCT, INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE. specifications subject to change without notice.



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