

Pressure Transmitters

Description

Pressure Transmitter is a kind of standard and most popular transmitter applied in air and liquid pressure measuring, since a high sensitivity silicon pressure chip is employed in the sensor. The pressure transmitter is designed for industry application with perfect long term stability, which is the most important specification for industry application.

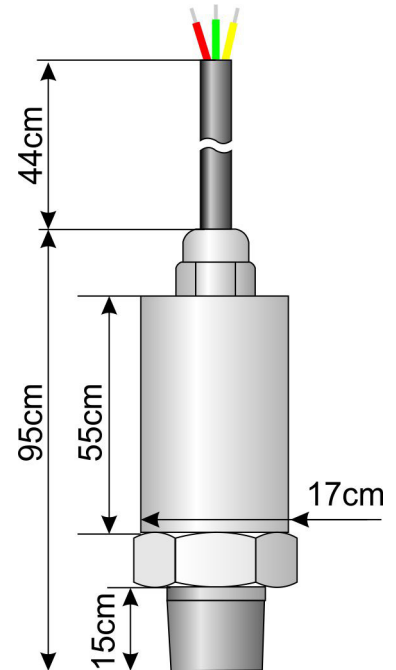
Feature:

- piezoresistive pressure sensor
- pressure range: 0~700psi, 0-400psi
- gas or dilute liquid compatible with 316LSS
- high reliability and stability

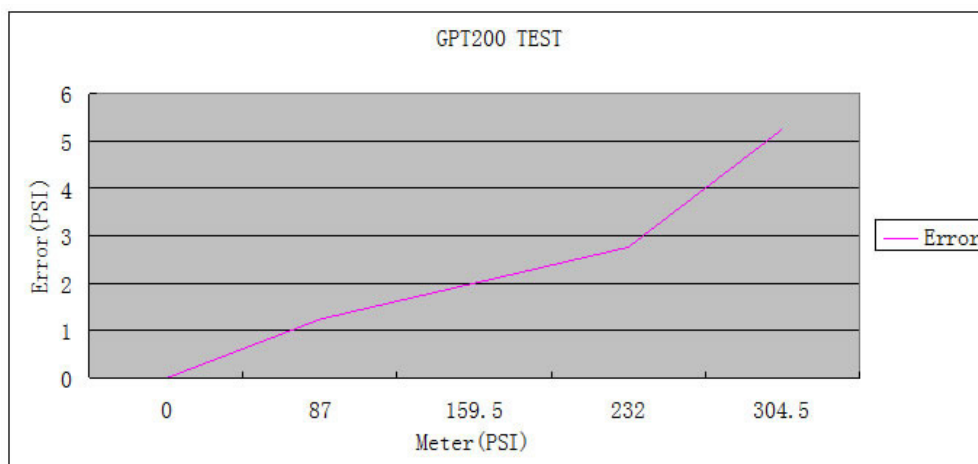


Specifications

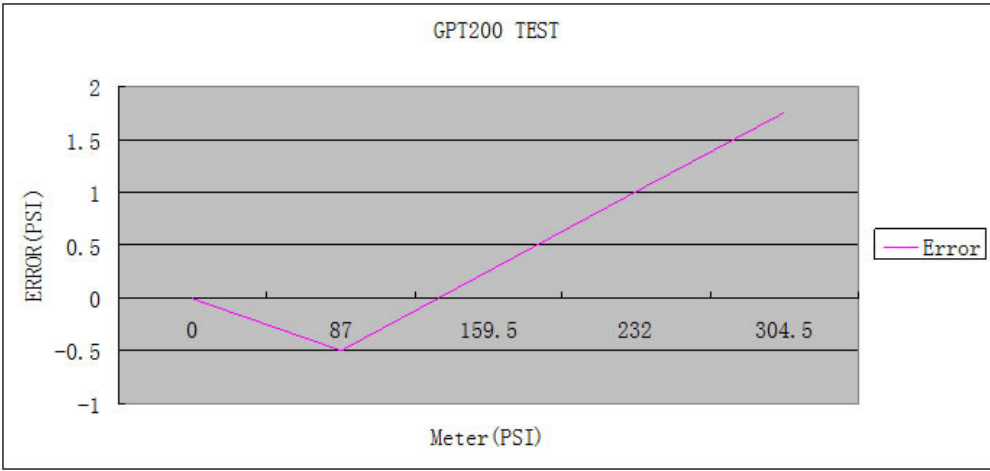
Pressure range	0~700psi, 0-400psi
Supply power	24VAC
Output signal	1~5V
Accuracy	0.5%F.S.
Pressure interface	1/4NPT
Operating temperature range	-20C~+85C
Storage temperature range	-40C~+125C
Protection	IP65
Explosion-proof	ExiallCT6
Housing material	Stainless steel
Material of pressure membrane	316L stainless steel



Pressure Test

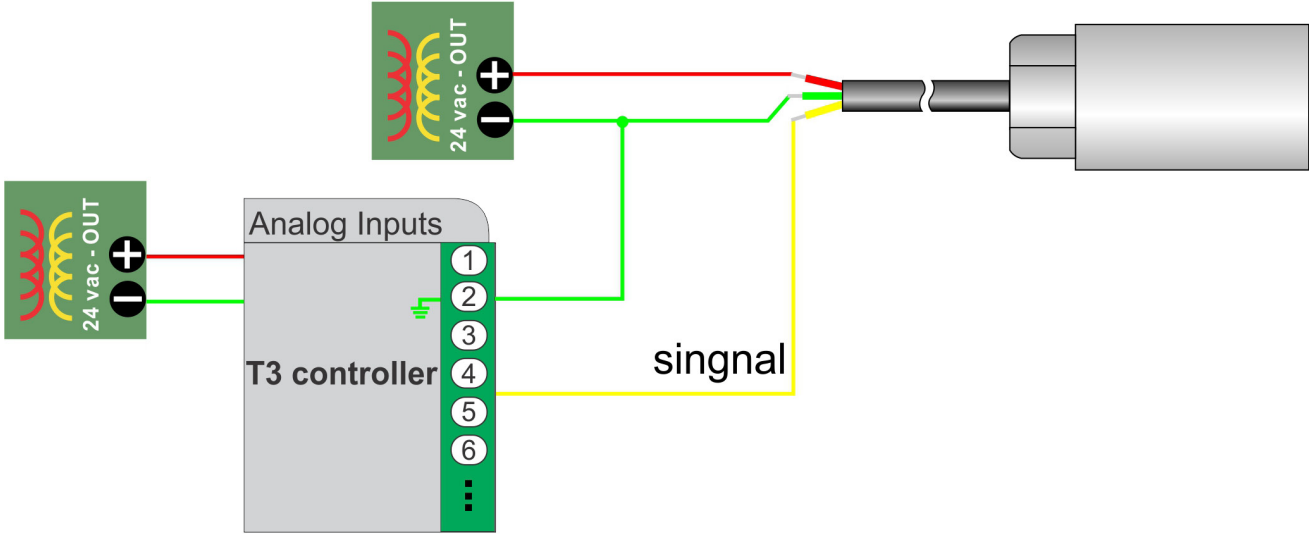


Pressure Transmitters

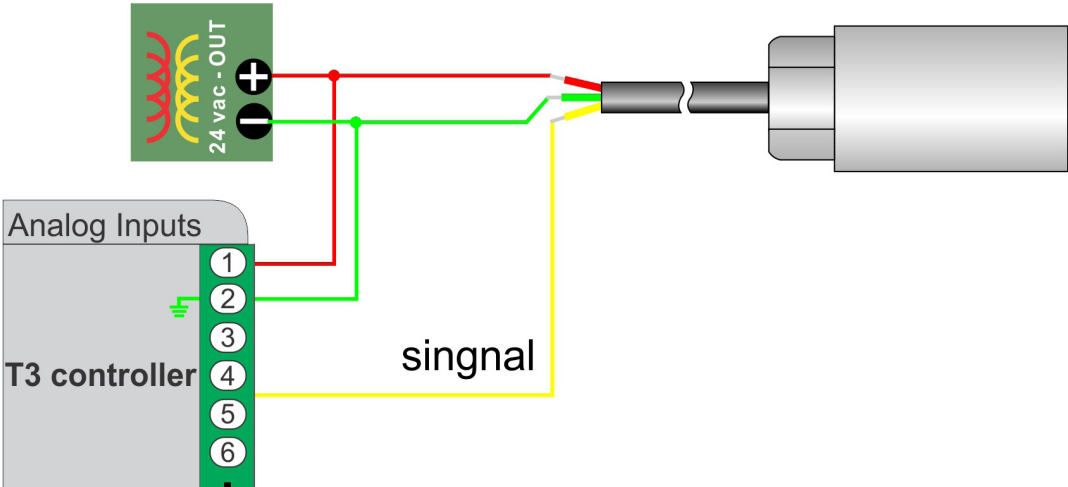


Wiring Diagram

Separate power supply



Shared power supply



Configuration

To configure one of the T3 controllers or expansion modules to use the pressure sensors, we can use the custom tables to scale the 0-5V signal to a certain pressure range. In the example below we're showing a 0-400psi sensor which outputs a 0-5V signal.

The screenshot displays the configuration interface for a T3 controller. The left-hand tree view shows the project structure, with the 'BTUMeter' device selected under 'Local Network'. The main window shows an 'INPUT' table with columns for Input, Panel, Full Label, Auto/Manual, Value, Units, Range, Calibration, Sign, Filter, Status, Jumper, and Label. A dialog box titled 'Select Range Number' is open, showing 'Enter Units Number: 50' and 'OK' and 'Cancel' buttons. Below this, a 'Table 1' dialog is shown, containing a table for defining the sensor's voltage-to-pressure mapping:

Voltage	Value
0.0	0
5.0	400

The 'Table 1' dialog also includes radio buttons for selecting the range type (e.g., '50. Table 1 (Psi)') and a list of jumper settings (e.g., '10. Unoccupy/Occupy', '11. Low/High', etc.).

1. Connect to the T3 controller or expansion module and select it in the left hand tree view.
2. Select the inputs grid.
3. Click on the range column which brings up the available options for various types of sensor signal.
4. Select range type 50 which brings up a table and some sliders representing the voltage and value of the sensor signal.
5. Enter the minimum and maximum voltage of the sensor as well as the value for the signal. 0 volts at 0psi and 5V at 400 psi in this example.
6. Enter the engineering units for the sensor, in this case Psi but you can type anything here such as Pa or kPa.
7. Finally, select the 'jumper setting', these are software jumpers which allow you to match the controller hardware with the signal type from the various options shown.
8. Finally, give the particular input a user name in the "Full Label" and shorter 'Label' columns.

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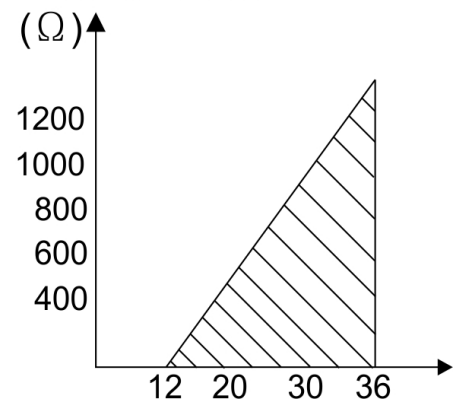
The pressure transmitter use advanced technologies such as diffused silicon, laser correction, temperature compensation and analog signal processing. It has the characteristics of high accuracy, good reliability, fast response and stable performance. The utility model has the advantages of simple structure, convenient installation, use and maintenance, strong anti-interference ability, and is suitable for long-distance signal transmission.



Specifications

Supple Voltage	12~36 VDC(General 2V)
Output signal	4~20mA, two wire; 0~5V/0~10V/1~5V,three wire
Load Resistance	0~750 Ω (General 250 Ω)
Accurancy	± 0.2 %FS, ± 0.1 %FS Optional
Operating Temperature	-25~ +80 $^{\circ}\text{C}$
Protection level	IP65
Connection terminal	Hirschmann/ Direct outlet/ Aviation plugs
Influence of environmental temperature	0.15%FS/10K
Measured medium	Liquid, Gas, Neat
Measuring range	Non-isolated 0~500Pa to 0~3kPa; Isolated 0~3kPa to 0~60MPa(Special 100MPa)
Over pressure limit	2 times the value of the calibration pressure
External Magnetic field strength	Less than or equal to 400A/m

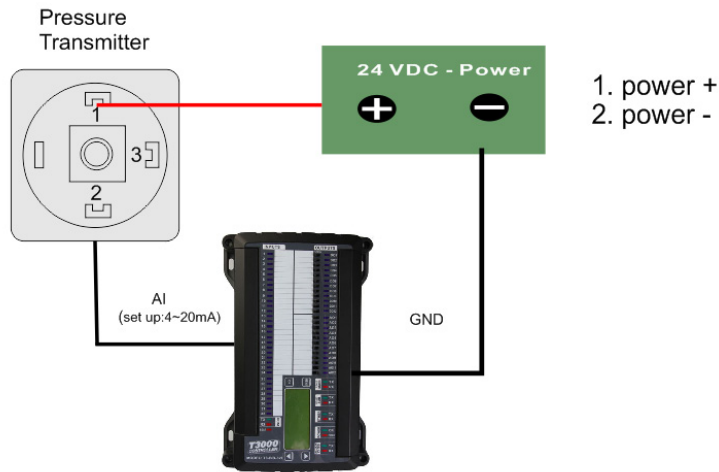
Load resistance R_L



Connection and commissioning

The pressure transmitter has been debugged before leaving the factory and needs no adjustment. After a long period of use, if you need to re calibrate, you can adjust the “potentiometer Z” and “range potentiometer S” respectively”. The lower limit of the pressure range corresponds to the output 4mA, and the upper limit corresponds to 20mA

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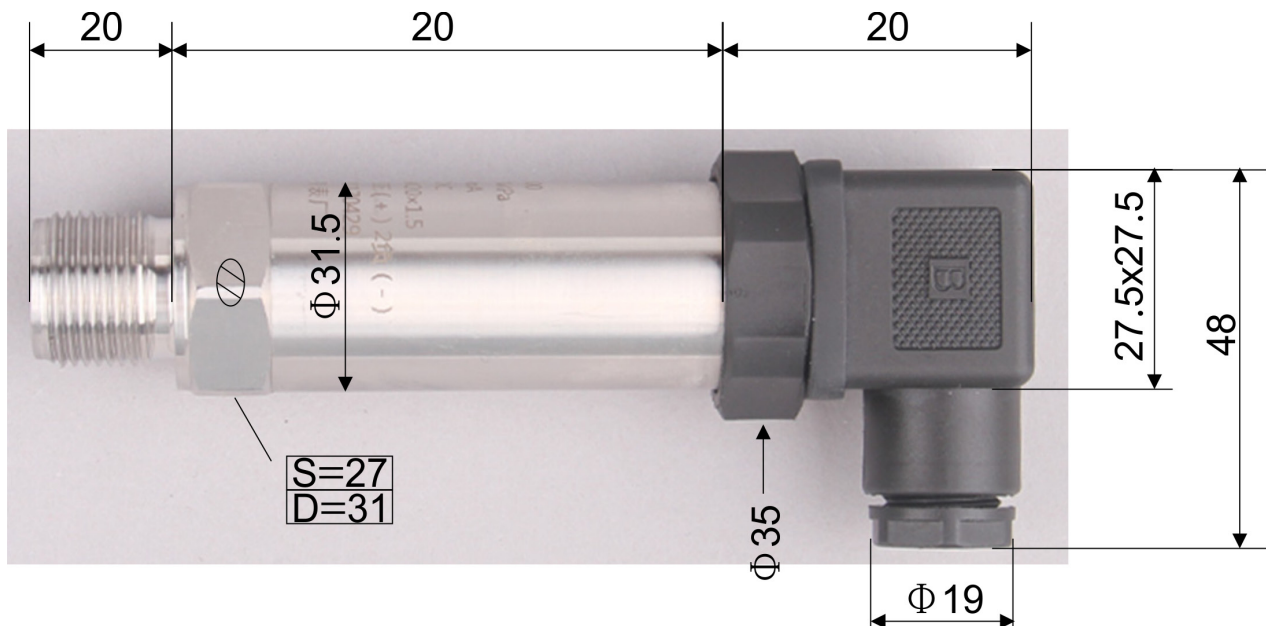


Dimension and Installation

*wetted material: 316L Stainless steel;

Pressure interface: G1/2, M20x1.5, G1/4, NPT1/2, M12X1, external thread

The pressure transmitter shall be installed as far as possible in the temperature gradient and temperature fluctuations, while avoiding vibration and impact. To ensure the joint seal of the transmitter, roll up the sealing tape on the joint and then screw the transmitter. The transmitter shall be installed directly at the measuring point, but a strong corrosive or overheated media shall not be in contact with the transmitter, and ask for corrosion protection and high temperature transmitters.



Description

The MSP300 pressure transducer from the Microfused line of TE is suitable for measurement of liquid or gas pressure, even for difficult media such as contaminated water, steam, and mildly corrosive fluids.

The transducer pressure cavity is machined from a solid piece of 17-4PH or 316L stainless steel. The standard version includes a 1/4 NPT pipe thread allowing a leak-proof, all metal sealed system. With excellent durability, there are no o-rings, welds or organics exposed to the pressure media.

TE's proprietary Microfused technology, derived from demanding aerospace applications, employs micromachined silicon piezoresistive strain gages fused with high temperature glass to a stainless steel diaphragm. This approach achieves media compatibility simply and elegantly while providing an exceptionally stable sensor without the PN junctions of conventional micromachined sensors.

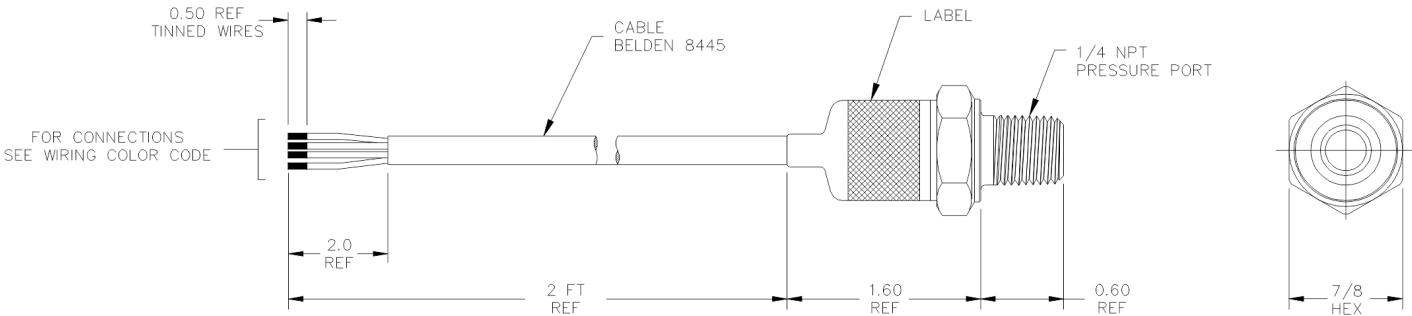


Features:

- One Piece Stainless Steel Construction
- Ranges up to 10k psi or 700 Bar
- mV or Amplified Outputs
- Excellent Accuracy
- Wide Operating Temperature Range

Range	psig	Range	Barg
0 to 100	•	0 to 7	•
0 to 250	•	0 to 17	•
0 to 500	•	0 to 35	•
0 to 1000	•	0 to 70	•
0 to 2500	•	0 to 175	•
0 to 5000	•	0 to 350	•
0 to 10k	•	0 to 700	•

Dimension



Specifications

Supply Voltage: 5.0V, Ambient Temperature: 25°C (unless otherwise specified)

PARAMETERS	MIN	TYP	MAX	UNITS	NOTES
Span Setting	-2		2	%Span	1
Zero Pressure Output (0 – 100mV)	-3		3	%Span	1
Zero Pressure Output (Amplified)	-2		2	%Span	1
Accuracy (combined non linearity, hysteresis, and repeatability)	-1		1	%Span	2
Temperature Error – Zero	-2		2	%Span	
Temperature Error – Span	-2		2	%Span	
Supply Current (0 – 100mV, 0.5 – 4.5V)			10	mA	
Supply Current (1 – 5V)			15	mA	
Long Term Stability (1 year)	-0.25		0.25	%Span	3
Pressure Overload	2X			Rated	
Pressure Cycles (Zero to Full Scale)	10			Million	
Output Load			1	MΩ	
Compensated Temperature	0		55	°C	
Operating Temperature	-20		+85	°C	4
Storage Temperature	-40		+125	°C	4
Burst Pressure	5X			Rated	
Vibration	±20			g	5
Shock (11ms)	50			g	6
Output Noise			2	mVRMS	
Bandwidth (-3dB)	1			kHz	
Weight		82.55		grams	
Media Compatibility	All Materials Compatible with 17-4 Stainless Steel				

Notes

1. Ratiometric to supply.
2. Best fit straight line.
3. Long term stability over a one year period.
4. Maximum temperature range for product with standard cable is -20°C to +105°C.
5. Per MIL-STD-810C, Procedure 514.2, Figure 514.2-2, Curve L.
6. 1/2 sine per MIL-STD 202F Method 213B condition A.

Output Options

Code	Output	Supply (V)		
		MIN	TYP	MAX
2	0 – 100 mV (ratiometric)	2.5	5	12
3	0.5 – 4.5 V (ratiometric)	4.75	5	5.25
4	1 – 5 V	8		30
5	4 – 20 mA	9		30

Wiring Color Code

Code	Output	+Supply	-Supply	+Out	-Out
2	0 – 100 mV (ratiometric)	Red	Black	Green	White
3	0.5 – 4.5 V (ratiometric)	Red	Black	White	N/A
4	1 – 5 V	Red	Black	White	N/A
5	4 – 20 mA	Red	Black	N/A	N/A

Wiring Diagram

Use a spare AO as power supply, 10~15mA

