Introduction:

D50 series pressure transducers are based on piezoresistive silicon pressure sensor. The sensing package utilizes silicone oil to transfer pressure from the 316L stainless steel diaphragm to the sensing element.

This pressure transducer supports I^2C and SPI interface protocols, A custom ASIC is used for temperature compensation, offset correction, and provides a digital output of 10-90% or 5-95%. The circuit is protected from reverse wiring at input and short circuit at output.

The wetted material is made of 316L stainless steel, Small size with all welded structure without O-ring.

Features:

- Pressure Range: 0-7kPa…7MPa
- Wide range of compensation temp. (-10~70℃)
- Stainless steel 316L welded, without O-ring
- High precision, total error band<0.50%(typical)
- Reverse polarity protection
- Small size; low cost

Application:

- Hydraulic/Pneumatic Control Systems
- Energy and Water Management
- Pumps and Compressors
- Advanced HVAC Systems
- Refrigeration Systems

Performance Specifications

Supply Voltage: 3.3Vdc

Ambient Temperature: 25° C (unless otherwise specified)

Parameters		Min.	Typical	Max.	Notes
Interface Type			I^2C (ADDR, 0X28H)		SPI (optional)
Accuracy(%FS)		-0.1	±0.05	0.1	combined linearity, hysteresis and repeatability.
Total Error Band (%FS)	≤100Kpa	-0.75	±0.5	0.75	includes calibration errors and temperature effects over the compensated range.
	>100Kpa	-0.5	±0.3	0.5	
Output Type			10% - 90% (A type)		5%-95%(B type) Optional
Zero Pressure Output			666		Count Hex
Full Scale Output(FS)			399A		
Resolution - Pressure(%FS)		0.008			14bits
Temp. Accuracy(℃)		-2		2	over the compensated temperature range
Resolution - Temp.(℃)			0.1		8-11bits
Operating Temp.(℃)		-40		125	Note1
Compensated Temp.(℃)	≤10kPa	0		50	
	>10kPa	-10		70	
Input Voltage(V)		2.7	3.3	5.5	
Current consumption	Non-Sleep		2.7mA		default (Note2)
	Sleep mode		2μA		optional
Load Resistance (KΩ)		10			
Insulation Resistance		50MΩ/250V			
Response Frequency (HZ)			2K		

Pressure Range		0-7kPa…7MPa
Overpressure	≤20kPa	10 times of rated pressure
	35kPa	5 times of rated pressure
	≥100kPa	2 times of rated pressure or 10MPa whichever is less
Wetted material		Stainless steel 316L
Fasten torque recommanded		20 N·m
Life		$>10^7$ full range pressure

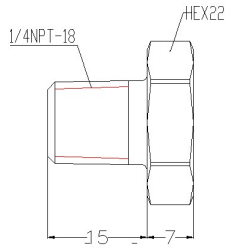
Note1: Operation temp. of cable is 105℃ maximum / M12 Connector operation temp. range: -25~85℃

Note2: Reduce response frequency can reduce the current consumption accordingly, Pls. contact factory if you want this option.

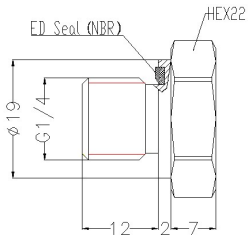
Dimensions(mm)

Pressure port and Hex

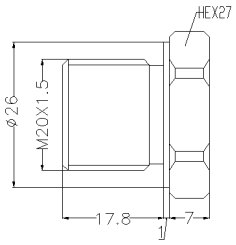
1. 1/4NPT



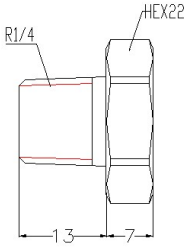
2. G1/4



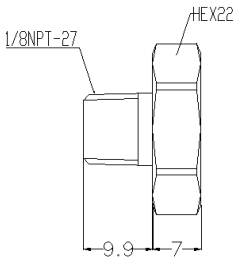
3. M20X1.5



4. R1/4

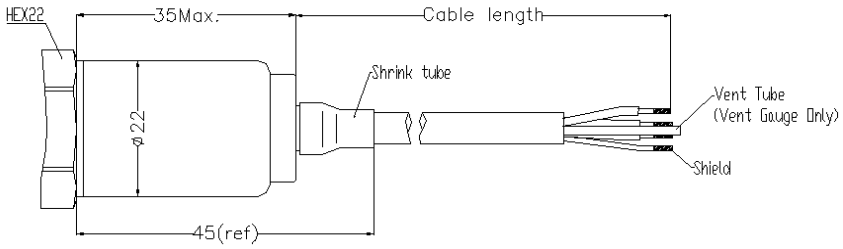


5. 1/8NPT



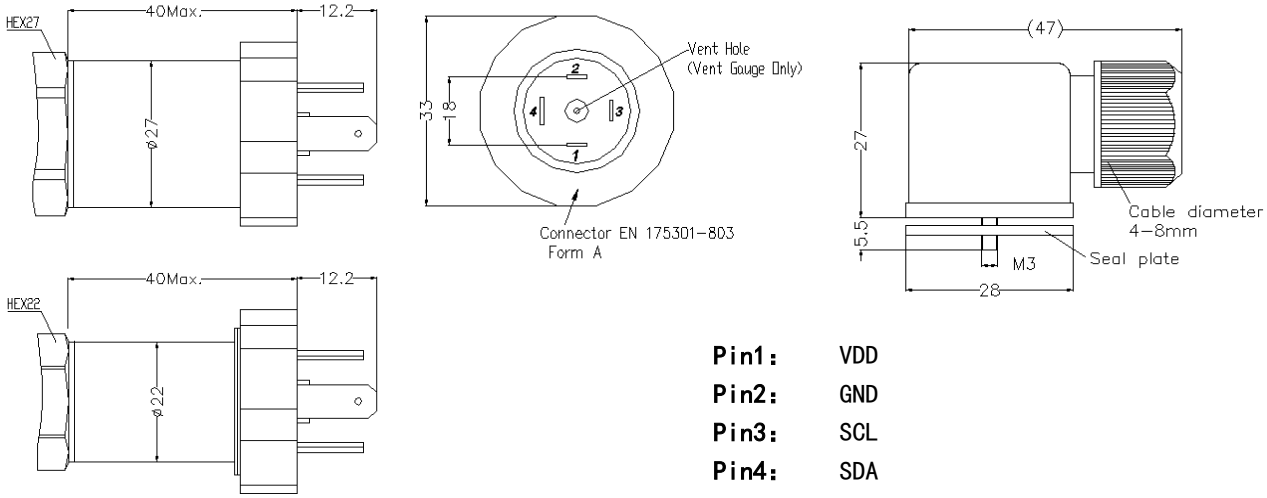
Case and Cable/Connector

Cable



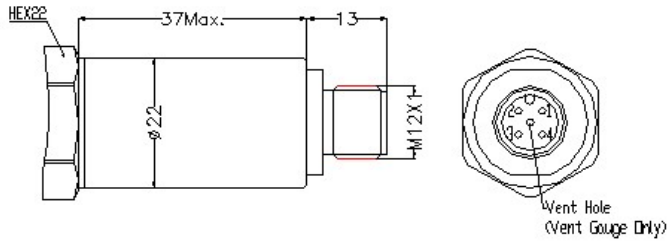
Red: VDD
Black: GND
Green: SCL
White: SDA

Connector EN 175301-803 (Form A)



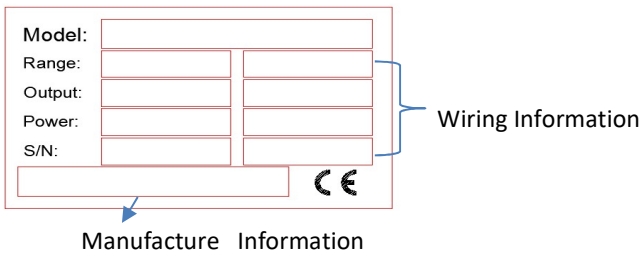
Pin1: VDD
Pin2: GND
Pin3: SCL
Pin4: SDA

M12X1 connector (4 Pins)



Pin1: VDD
Pin2: SCL
Pin3: GND
Pin4: SDA

Label



Ordering Information

Model	Description
D50	MEMS Oil Filled Transducer (I^2C)

Code	Pressure Range	Vent Gauge	Sealed Gauge	Absolute
7k	0-7kPa	*		
10k	0-10kPa	*		
20k	0-20kPa	*		
35k	0-35kPa	*		
100k	0-100kPa	*	*	*
200k	0-200kPa	*	*	*
400k	0-400kPa	*	*	*
600k	0-600kPa	*	*	*
1M	0-1MPa	*	*	*
1.6M	0-1.6MPa	*	*	*
2.5M	0-2.5MPa	*	*	*
4M	0-4MPa	*	*	*
7M	0-7MPa	*	*	*
XX	Others			

Code	Description
G	Vent Gauge
S	Sealed Gauge
A	Absolute

Code	Description
1	1/4NPT
2	G 1/4
3	M20X1.5
4	R1/4 （old ZG1/4）
5	1/8NPT
X	Others

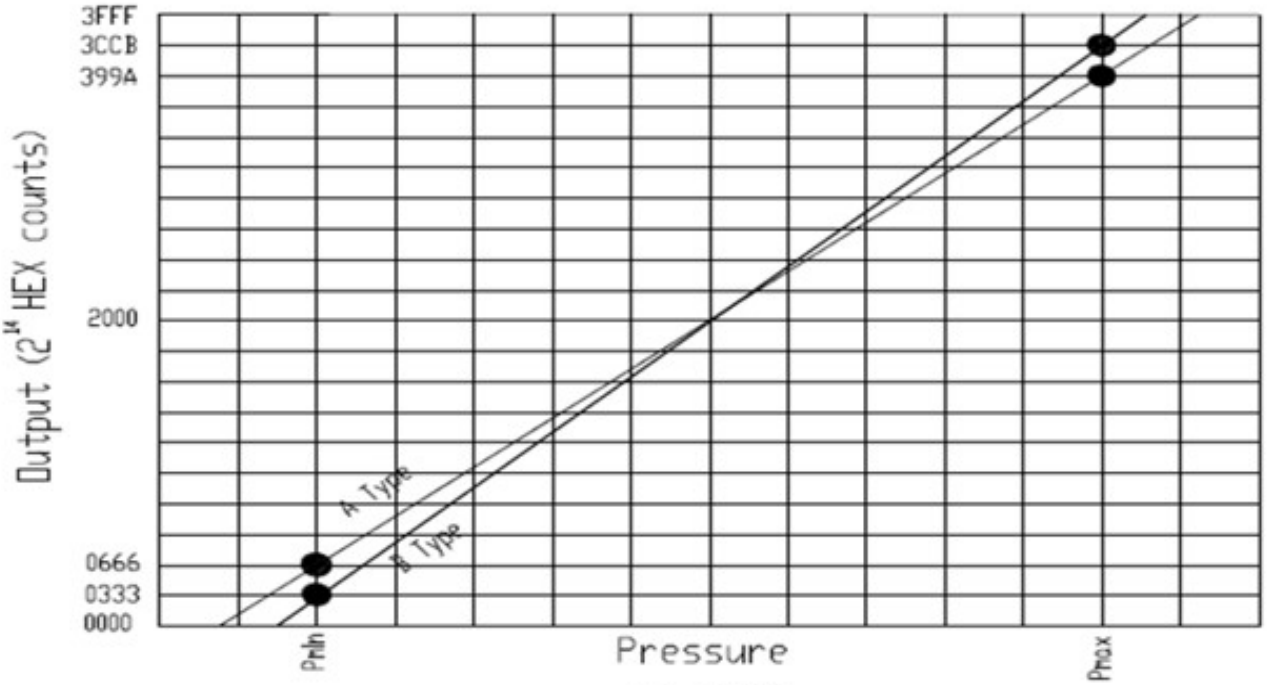
代码	引线方式
2(*m)	Cable（lengh: *meter）
3	Connector EN 175301-803 (Form A)
4	M12X1（4 Core Male）
X	Others

Example:

D50	600k	A	1	2(1m)		
I^2C	0-600kPa	Absolute	1/4NPT	Cable 1 m		Model: D50-600kA-12 (1m)

Remark: If need negtive pressure sensor, Pls. contact us

PRESSURE TRANSFER FUNCTIONS



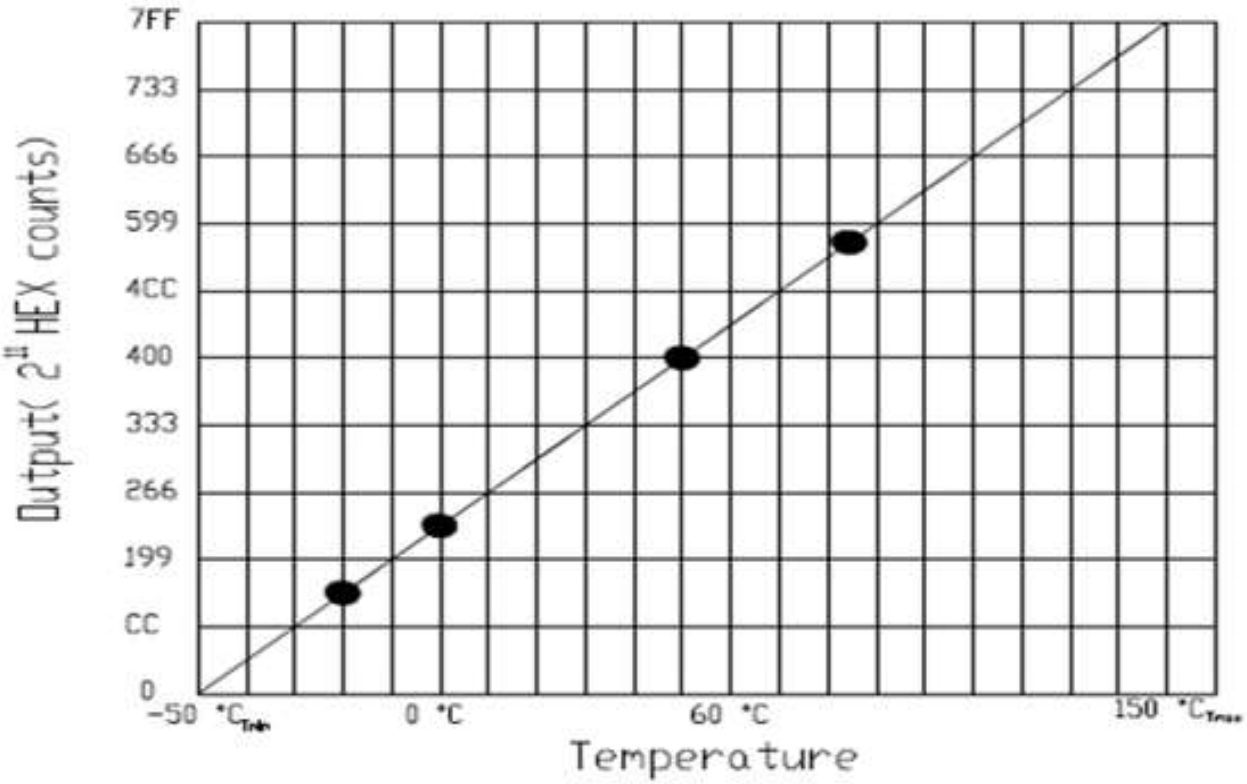
$$\text{A Type: Output (Decimal counts)} = \frac{80\% * 16383}{P_{max}-P_{min}} * (\text{Pressure}_{applied} - P_{min}) + 10\% * 16383$$

$$\text{B Type: Output (Decimal counts)} = \frac{90\% * 16383}{P_{max}-P_{min}} * (\text{Pressure}_{applied} - P_{min}) + 5\% * 16383$$

Sensor Output at Significant Percentages

% Output	Digital Counts (decimal)	Digital Counts (hex)
0	0	0 X 0000
5	819	0 X 0333
10	1638	0 X 0666
50	8192	0 X 2000
90	14746	0 X 399A
95	15563	0 X 3CCB
100	16383	0 X 3FFF

TEMPERATURE TRANSFER FUNCTIONS



$$\text{Output (Decimal Counts)} = \frac{(\text{Output °C } (-50°C)_{Tmin}) * 2047}{(150°C_{Tmax} - (-50°C)_{Tmin})}$$

Temperature Output vs Counts

Output °C	Digital Counts (decimal)	Digital Counts (hex)
-50	0	0 X 0000
0	512	0 X 0200
10	614	0 X 0266
25	767	0 X 02FF
40	921	0 X 0399
85	1381	0 X 0565
150	2047	0 X 07FF