

## Precision digital output MEMS pressure sensor

### Performance

Pressure range(FS)	1~500 psi
Accuracy(BFSL typical)	±0.25% FS
Span stability(typical)	±0.5% FS/1000H
Total error band	±1% FS
Interface type	I <sup>2</sup> C/SPI
I <sup>2</sup> C clock	100~400KHz
SPI clock	50~800KHz
Output type(A type)	10%~90%
Output type(B type)	5%~95%
Resolution(14bits)	0.008% FS
Response time(typical)	0.5ms

### Electrical

Excitation(-3.3)	3.3±0.3Vdc
Excitation(-5)	5±0.2Vdc
Supply current(@3.3Vdc typical)	2mA
Supply current(@5Vdc typical)	3mA
I <sup>2</sup> C/SPI low level	<0.2V <sub>supply</sub>
I <sup>2</sup> C/SPI high level	>0.8V <sub>supply</sub>
Pull-up resistor	>1KΩ
Warm up	<7ms
Voltage limit	-0.3~6Vdc
ESD susceptibility	4KV

### Environmental

Operation temperature	-40 to 125°C
Compensated temperature	0 to 60°C
Humidity	0 to 95% RH
Solder temperature(SIP/DIP)	5s Max. at 250°C
Reflow peak temperature (SMT)	15s Max. at 250°C
Operation temperature	-40 to 125°C
Thermal hysteresis	±0.5% FS
Gravity(1g) sensitivity	±0.15% FSO
Pressure cycles	1 million FS cycles
Overload pressure	>3 * FS
Burst pressure	>5 * FS.
Vibration	<20 g@10~2000Hz
Shock	<100 g, 11ms pulse
Media	Ceramic, Silicon, Glass, Silicone epoxy compatible
Cover	PPS
Substrate	Ceramic
Sealing	Silicone epoxy
Pressure port	1/8" barbed ports(for 3/32" ID tubing)
Electrical connection	DIP, SIP or SMT

### Features

- Piezoresistive MEMS element
- Gauge/ Differential/ Absolute ref.
- I<sup>2</sup>C or SPI Interface protocols
- ASIC fully calibrated
- Gas and non-corrosive fluids
- Low cost OEM
- Range: 1 to 500 psi
- Temperature compensated
- Various package
- Small size
- Energy efficient
- Excellent long-term stability
- Industry-leading TEB
- ±0.25%FS BFSL
- RoHS compliant.

TEB=Total Error Band

ASIC=Application Specific Integrated Circuit

### Application

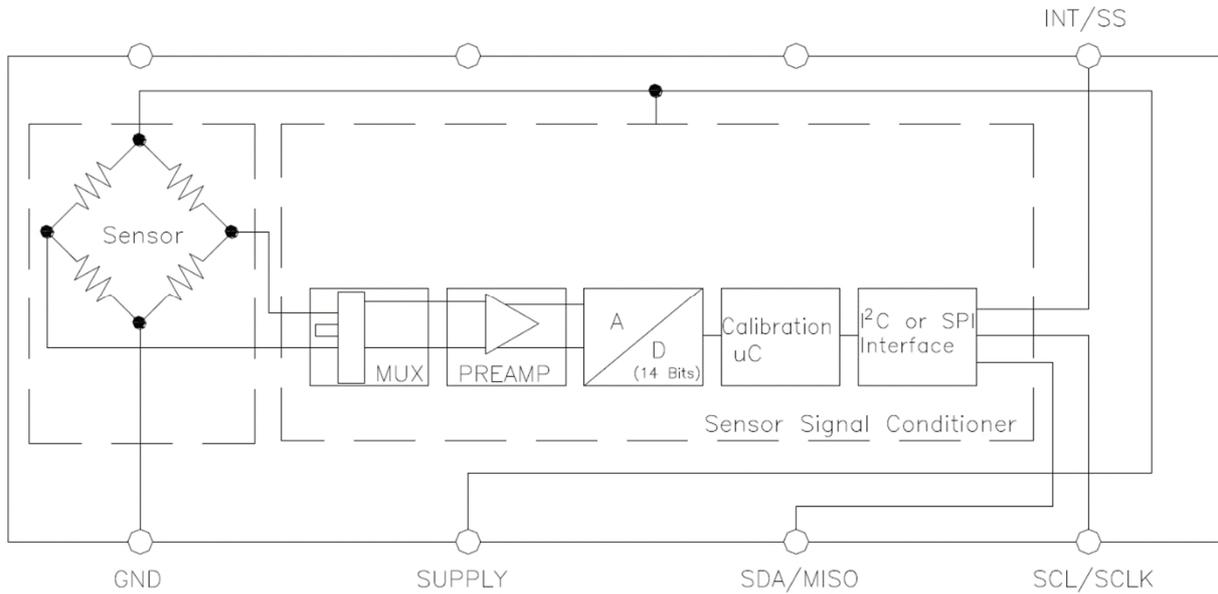
- Ventilator machine
- Anesthesia apparatus
- Atomization device
- Altitude measurements
- Airspeed monitoring
- Pneumatometer
- HVAC transmitters
- Clogged HVAC filter detection

HVAC=Heating, Ventilation, Air Conditioning

### Application note

- Liquid medium should be applied only on pressure port A; Pressure port B is not compatible with liquid.
- The liquid medium should not contain any particles. The particles will accumulate in the sensor and cause the sensor damaged.
- It is recommended that the pressure port A should be placed down to avoid particles accumulating in the pressure sensor.
- Liquid medium should not produce any residue when it is dry; the residue within the sensor may affect the sensor output. The sealed sensor cleaning is very difficult and the residue cannot be easily removed.
- Ensure the liquid media is compatible with the sensor.

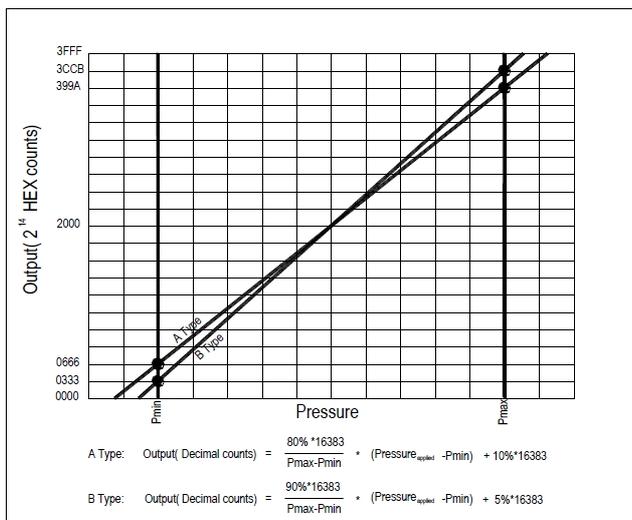
## Schematic:



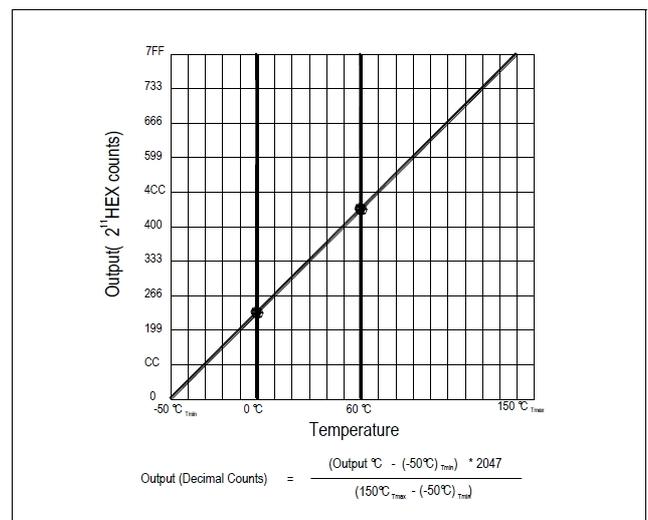
## Sensor output at significant percentages:

% Output	Digital Counts (decimal)	Analog (V)
0	0	0
5	819	0.25
10	1638	0.5
50	8192	2.5
90	14746	4.5
95	15565	4.75
100	16383	5

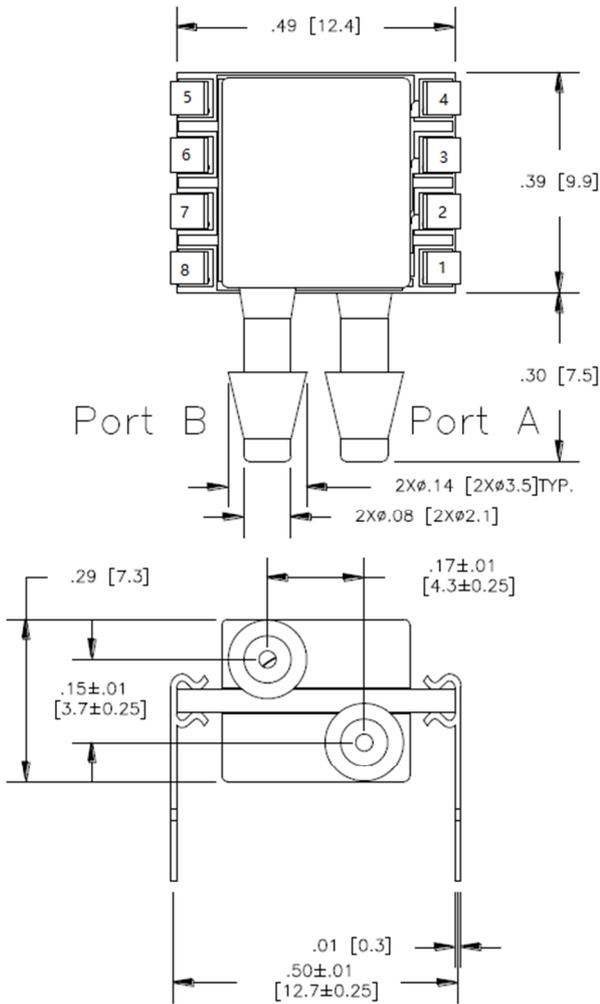
Pressure Transfer Functions



Temperature Transfer Functions



## Dimension:

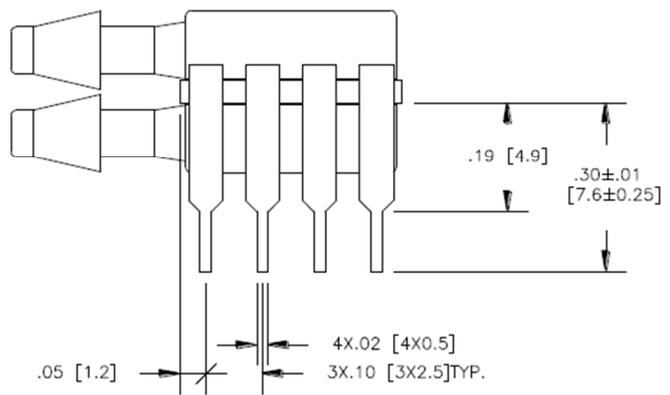


Temperature Output vs Counts

Output °C	Digital Counts (decimal)	Digital Counts (hex)
-50	0	0 X 0000
0	511	0 X 01FF
10	614	0 X 0266
25	767	0 X 02FF
50	1023	0 X 03FF
85	1381	0 X 0565
150	2047	0 X 07FF

CONNECTION DIAGRAM

Output type	1	2	3	4	5	6	7	8
Digital	Ground	V <sub>supply</sub>	SDA/MISO	SCL/SC LK	INS/SS	Blank	Blank	Blank



## Ordering Information

P2106R-10G-SD-SA-5-M

Range in psi:  
 1/2/5/15/30/50/100/150/300/500 for Gauge  
 1/2/5/15/30/50/100/150/300/500 for Differential  
 15/30/50/100/150/300/500 for Absolute  
 500 for Compare to -15psiG

Reference type:  
 G= Gauge pressure  
 D= Differential  
 A= Absolute  
 C= Compare to -15psiG

Port type:  
 D= Dual sider port

Solder type:  
 D= DIP  
 S= SIP  
 M= SMT

Moisture proof:  
 M= Proof  
 Blank= Non proof

Excitation type:  
 3.3= 3.3Vdc  
 5= 5Vdc

Output option:  
 A= 10~90%  
 B= 5~95%

Interface:  
 I= I2C  
 S= SPI