

**Piezotron®**

Type 211B...

**Miniature, High Sensitivity, Voltage Output Pressure Sensors**

The Type 211B... series are general purpose pressure sensors that measure transient and repetitive dynamic events in a wide variety of applications.

- Low impedance, voltage mode
- High level voltage signal
- Acceleration compensated
- High natural frequency
- Conforming to CE

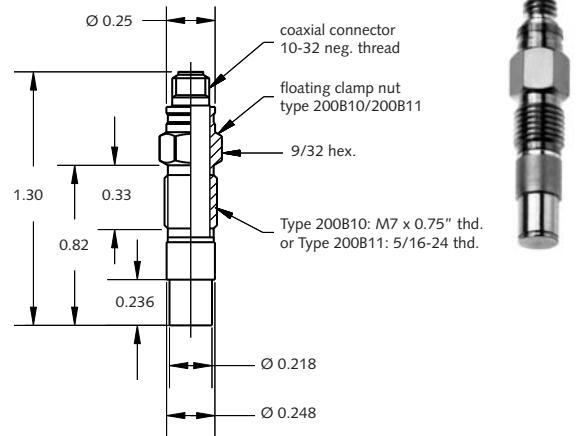
**Application**

Type 211B... pressure sensor series is ideally suited for fast transient measurements under varied environmental conditions. Typical applications include: line pressure pulsation and surge, cavitation, hydraulic and pneumatic systems, automotive tests, sound pressure, shock tubes, closed bomb and blast pressure measurements.

**Description**

Type 211B, general purpose, miniature pressure sensors incorporate acceleration-compensation, high natural frequency and integral, low impedance Piezotron circuit electronics. Cable noise is minimized, eliminating need for highly insulated cables. Contained within the housing, and located behind the diaphragm, is a pair of compression-preloaded quartz assemblies. Each assembly consists of quartz plates, interleaved with gold electrodes. The piezoelectric material of these plates generate a charge proportional to the force which causes stress. The force can be in the form of pressure on the diaphragm, vibrating the diaphragm mass. The acceleration sensitivity of each assembly is equal to the other but opposite polarity, thereby, canceling any acceleration effects from the net charge generated by the assemblies. An internal microelectronic signal conditioning circuit converts the net charge into a useable high level voltage output signal at a low impedance level.

The signal and DC excitation power to the unit are conducted through a single coaxial cable, such as Series 1761 or 1762, or a standard, two-wire lead. This simple power signal circuitry makes it possible to easily check the circuit's integrity. Power and signal processing to the sensor can be provided by any one of the series 5100 couplers or by any industry standard voltage mode IEPE (Integral Electronic Piezo-Electric) power supply/coupler.



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Type:	Units	211B1	211B2	211B3	211B4	211B5	211B6
Pressure range	psi	10000	5000	500	200	100	50
Sensitivity, nom.	mV/psi	0.5	1.0	10	25	50	100
Resolution, (noise)	psi (rms)	0.1	0.05	0.005	0.002	0.001	0.0005
Acceleration sensitivity	psi/g	0.002					
Linearity, zero based BFSL	%	±1					
Hysteresis	%	1					
Resonant frequency, nom.	kHz	500	500	500	500	300	250
Rise time 10 ... 90 %	µs	1	1	2	1	2	2
Time constant, R.T., nom.	s	700	340	100	15	20	30
Low frequency response -5 % point	Hz	0.0007	0.0014	0.005	0.033	0.025	0.005
High frequency response +5 % point	kHz	100	100	50	100	50	50

#### Environmental

Temperature range, (4 mA supply current)	°F	-65 ... 250					
Temperature coefficient of sensitivity	%/°F	0.03					
Vibration max.	g	1000					500
Shock limit (1 ms pulse)	g	20000					5000
Bias nom.	VDC	11					

#### Power supply

Supply voltage, no load	VDC	20 ... 30					
Supply ripple, max.	mV ms	100					
Supply current nom	mA	4					
Constant current	mA	2 ... 20					
Current source impedance, nom.	kΩ	250					

#### Output

Current min.	mA	2					
Impedance max.	Ω	100					

#### Construction

Sensing element	Type	quartz/compression					
Diaphragm	material	316L st stl.					
Housing	material	17-4 st stl.					
Connector, extension	material	303 st. stl.					
Sealing housing/diaphragm	Type	welded/hermetic					
Connector	Type	10-32 neg.					
Weight with floating nut	grams	7					
Mounting Torque	lbf-in	24 ... 48					

1 psi = 0.0689 bar, 1 Inch = 25.4 mm, 1 Gramm = 0.03527 oz, 1 lbf-in = 0.113 N·m

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**Mounting**

Reliable and accurate pressure measurements require precise machining of the mounting hole. Kistler provides a wide variety of mounting adaptors which eliminates the need for precise machining and simplifies installation. The Operating Instruction Manual for Type 211B... provides detailed machining information for installing the sensor in a test structure not using a mounting adaptor.

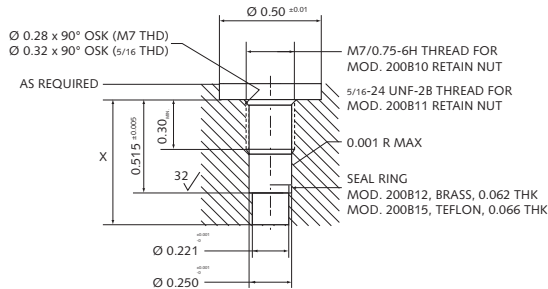


Fig. 1: Flush mounting

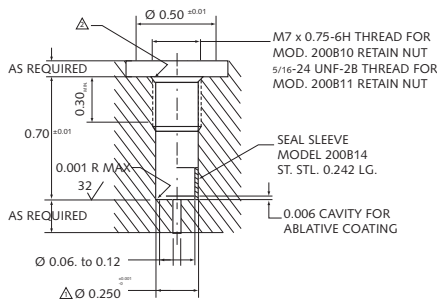


Fig. 2: Recess mounting

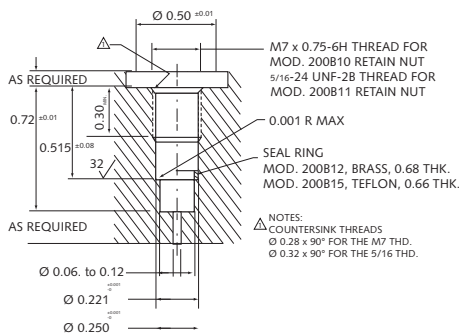


Fig. 3: Recess mounting with ring

**Accessories Included**

- Floating nut, M7 x 0.75 thread
- Floating nut, 5/16-24 thread
- Brass seal, 0.094 thk.
- Stainless steel seal, 0.242 long

Type
200B10
200B11
200B13
200B14

**Optional Accessories**

- (2) Brass seals, 0.062 thk.
- (2) Teflon® seals, 0.066 thk.
- Miniature, high sensitivity, charge output pressure sensor
- Miniature, high frequency, charge output pressure sensor

Type
200B12
200B15
601B1
603B1

Measure	Connect	Amplify	Output	Analyze
Type 211B... Low impedance	Type 1761B... 10-32 pos BNC pos.	Type 51... Power supply / signal conditioner	Type 1511 BNC pos. BNC pos.	not supplied

Fig.4: Measuring chain

**Ordering Key**

**Measuring Range (psi)**

10000	1
5000	2
500	3
200	4
100	5
50	6

Type 211B

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