High Sensitivity Dynamic Pressure Sensors

For High Intensity Acoustic, Turbulence, and Pulsation Measurements

- Measure high-intensity acoustic sound pressure levels such as jet engine, rocket motor, and weapons discharge noises
- Monitor low-level pressure pulsations, turbulence, and noise in hydraulic and pneumatic systems
- Detect pressure fluctuations in exhaust systems, compressors, turbines, pumps, and pipe lines
- Troubleshoot process systems to increase efficiencies, reduce maintenance, and trim waste

Piezoelectric pressure sensors are best suited for detecting and measuring dynamic pressure phenomena. With very rapid response times, these sensors can accurately measure fast transient pressures, such as surges, spikes, pulsations, and noise — both acoustic and ultrasonic. With no moving parts and solid state construction, their durability is unsurpassed by any other type of pressure sensor.

Since piezoelectric pressure sensors are AC coupled devices, they will ignore any ambient, static pressure, or very slow pressure change. This property provides these sensors with the unique ability to monitor low-level dynamic pressures while being subjected to a high static background pressure level.

Series 106 and 116 pressure sensors generate high-level output signals capable of detecting small pressure fluctuations and high-intensity sound pressure levels. For this reason, these sensors can be categorized as microphones.

As with all equipment from PCB®, these sensors are complemented with toll free applications assistance, 24-hour customer service, and are backed by a no risk policy that guarantees satisfaction or your money refunded.
## ICP® Sensor Systems

The Series 106 are ICP® sensors. These units contain built-in microelectronic circuits for a low-impedance voltage output. Constant-current excitation power is necessary for these signals. This power may be derived from an ICP® sensor signal conditioner or from an analyzer with ICP® sensors. Examples of ICP® pressure measurement systems are shown below.

### ICP® Pressure Sensor

![ICP® Pressure Sensor](image)

### ICP® Sensor Signal Conditioner

![ICP® Sensor Signal Conditioner](image)

### Readout Instrument

![Readout Instrument](image)

### Notes

All specifications are at room temperature unless otherwise specified.

[1] for ± 2.5 V output

[2] for ± 5 V output


[5] Resolution dependent on range setting and cable length used in charge system.
**SERIES 106 AND 116**

**Charge Output Sensor Systems**

The Series 116B are charge output piezoelectric sensors. These units do not contain any built-in circuitry. This enables them to operate to higher temperature extremes. Charge output sensor signals must be externally conditioned by a laboratory style, or in-line, charge amplifier before they can be analyzed or recorded. Examples of charge output pressure measurement systems are shown below.

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### Charge Output Styles

<table>
<thead>
<tr>
<th>Model Code</th>
<th>Description</th>
<th>Pressure Range</th>
<th>Sensitivity</th>
<th>Temp. Range</th>
<th>Size</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>106B52</td>
<td>Low-Noise Sensor Cable</td>
<td>20 - 1000 psi</td>
<td>0.1 - 10 V/psi</td>
<td>-40 to 250°C</td>
<td>0.75 inch</td>
<td>0.5 lb</td>
</tr>
<tr>
<td>116B</td>
<td>Low-Noise Sensor Cable</td>
<td>20 - 1000 psi</td>
<td>0.1 - 10 V/psi</td>
<td>-40 to 250°C</td>
<td>0.75 inch</td>
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### Charge Output Sensor Systems Diagram

![Diagram of charge output sensor systems](diagram.png)

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**Table of Specifications**

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**Low-Noise Sensor Cable**

Charge Output Pressure Sensor

Charge Amplifier

Output Cable

Charge Output Pressure Sensor

In-Line Charge Converter

ICP® Sensor Signal Conditioner

Readout Instrument
Low-Noise ICP® Sensor Signal Conditioners — Models 482A21 (single channel) and 482A22 (four channel)

Provides ICP® sensor excitation and conditions the measurement signal for delivery to readout, recording, or analysis instruments.

- Available in single or four channel versions
- Powered by remote, AC power adaptor
- Optional, remote battery pack for DC power
- Powers ICP® sensors and in-line charge converters

Rack Mountable, Multi-Channel Signal Conditioners — Series 481

Condition measurement signals from ICP® or charge output sensors for delivery to readout, recording, or analysis instruments.

- Available in eight or sixteen channel versions
- Building-block architecture permits custom configuration from many available features
- Options include gain, filtering, bank switching, computer control, and more
- Powers ICP® sensors
- Optional built-in charge converters permit direct compatibility with charge output sensors

In-Line Charge Converters — Series 422

Adapt charge output sensors to voltage readout, recording, or analysis instruments.

- Convert high impedance charge sensor output signals into low-impedance voltage signals
- Provides fixed charge conversion regardless of cable length or input capacitance
- Permits long distance signal transmission over ordinary coaxial cable
- Versions available for high temperature sensors that may have lower insulation resistance

<table>
<thead>
<tr>
<th>Model</th>
<th>Conversion</th>
<th>LF Response</th>
<th>Min. Source Resistance</th>
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</thead>
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<tr>
<td>422E11</td>
<td>100 mV/pc</td>
<td>5 Hz (-5%)</td>
<td></td>
</tr>
<tr>
<td>422E12</td>
<td>10 mV/pc</td>
<td>5 Hz (-5%)</td>
<td></td>
</tr>
<tr>
<td>422E13</td>
<td>1 mV/pc</td>
<td>5 Hz (-5%)</td>
<td></td>
</tr>
<tr>
<td>422E35*</td>
<td>1 mV/pc</td>
<td>5 Hz (-10%)</td>
<td>10k ohm</td>
</tr>
<tr>
<td>422E36*</td>
<td>10 mV/pc</td>
<td>1 Hz (-10%)</td>
<td>10k ohm</td>
</tr>
</tbody>
</table>

*specifically designed for use with sensors that operate at extreme, elevated temperatures, > 400 °F (204 °C)

Dual Mode Amplifier - Model 443B02

Operates as a charge amplifier or ICP® sensor signal conditioner.

- Ultra low noise floor
- Long, discharge time constant for quasi-static measurement capability
- Automated drift nulling
- Selectable high-pass and low-pass filtering
- Menu driven display with RS-232 computer control

Low-Noise Cables for Charge Output Sensors

Transmit high-impedance, charge sensor signals to charge converters or charge amplifiers.

- Teflon (500 °F, 260 °C) or Inconel (1500 °F, 816 °C) jacket
- Low triboelectric noise characteristic
- Hardline versions available as separate assemblies or welded directly to sensor

The Pressure Division of PCB® Piezotronics, Inc. specializes in the development, application, and support of piezoelectric and piezoresistive pressure sensors, transducers, and transmitters for dynamic and static pressure test, measurement, monitoring, and control requirements. This product focus, coupled with the strengths and resources of PCB, permits the Pressure Division to offer exceptional customer service, 24-hour technical assistance, and a Total Customer Satisfaction guarantee.

Visit www.pcb.com to locate your nearest sales office