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Series 422E5x

In-line ICP® Charge Converters

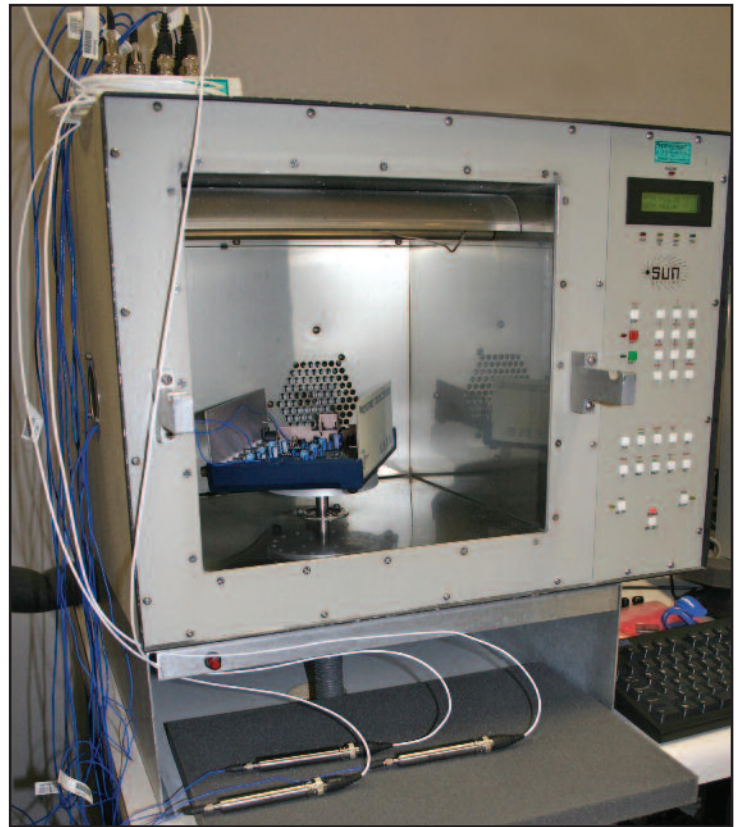
For Conditioning High-temperature, Charge Mode, Piezoelectric Sensors

Highlights

- Condition Signals from Charge Output Piezoelectric Sensors
- Convert High Impedance Charge Signals into Low Impedance Voltage Signals
- Operate with ICP® Sensor Signal Conditioners or Readout Devices Having an ICP® Sensor Input
- Fixed Charge Conversion Regardless of Input Capacitance

Applications

- High temperature vibration measurements
 - Thermal stress screening
 - Steam turbine testing
 - Engine vibration analysis
- High temperature pressure measurements
 - Compressor analysis
 - Ballistic/Gun measurements
- 3-Component force measurements
- Applications that demand high temperature, charge mode piezoelectric sensors



In-line ICP® charge converters serve to convert high impedance charge mode piezoelectric sensor signals into low impedance voltage signals for input into readout, recording, and analysis instruments. Powered by ICP® sensor signal conditioners, series 422E5x converters are placed between the sensor and signal conditioner. They can also connect directly to a DAQ system or readout device if the system includes ICP® power. Low noise cabling must be used to connect the sensor to the converter. Standard coaxial cabling can be used to connect the output of the converter to the signal conditioner or readout device.

These units are well suited for use with high temperature piezoelectric sensors operating in environments up to 500 °F (260 °C). The series features a ± 5.0 V output, a variety of gain options, and comes in a small, rugged package. They offer a less expensive option compared to laboratory charge amplifiers, which makes them very attractive for multi-channel requirements.

As with all equipment from PCB®, these charge converters are complemented with toll-free applications assistance, 24-hour customer service, and are backed by our **Total Customer Satisfaction** guarantee.



Series 422E5x





Featured Product 422E5x In-line charge converter



Charge output accelerometer



Low noise cable



Standard output cable



ICP® sensor signal conditioner

In-Line ICP® Powered Charge Converters (for use with sensors operating up to 500 °F)

Model Number	422E51	422E52	422E53	422E54	422E55
Gain (Charge Conversion Sensitivity)	100 mV/pC (±5%)	10 mV/pC (±2.5%)	1 mV/pC (±2.5%)	0.1 mV/pC (±2.5%)	0.5 mV/pC (±2.5%)
Input Range	±50 pC	±500 pC	±5000 pC	±50,000 pC	±10,000 pC
Output Voltage Range	±5.0 V	±5.0 V	±5.0 V	±5.0 V	±5.0 V
Frequency Response (-5%) [1]	5 to 100k Hz	5 to 100k Hz	5 to 100k Hz	5 to 50k Hz	0.5 to 100k Hz
Broadband Electrical Noise	49 µV rms	33 µV rms	33 µV rms	33 µV rms	33 µV rms
Temperature Range	-65 to +250 °F -54 to +121 °C	-65 to +250 °F -54 to +121 °C	-65 to +250 °F -54 to +121 °C	-65 to +250 °F -54 to +121 °C	-65 to +250 °F -54 to +121 °C
Excitation Voltage	18 to 28 VDC	18 to 28 VDC	18 to 28 VDC	18 to 28 VDC	18 to 28 VDC
Constant Current Excitation	2 to 20 mA	2 to 20 mA	2 to 20 mA	2 to 20 mA	2 to 20 mA
Input Connector	10-32 Jack	10-32 Jack	10-32 Jack	10-32 Jack	10-32 Jack
Output Connector	BNC Jack	BNC Jack	BNC Jack	BNC Jack	BNC Jack
Resistance (Minimum required at input)	10 ⁸ ohms	10 ⁸ ohms	10 ⁸ ohms	10 ⁸ ohms	10 ⁸ ohms
Size	3.4 x 0.5 in 86 x 13 mm	3.4 x 0.5 in 86 x 13 mm	3.4 x 0.5 in 86 x 13 mm	3.4 x 0.5 in 86 x 13 mm	3.4 x 0.5 in 86 x 13 mm

Notes

[1] High frequency response may be limited by supply current and output cable length

In addition to the 422E5x series, PCB® also offers the 422E3x series for use with sensors operating above 500 °F, and the 422E6x series for use in radiation environments.

In-Line ICP® Powered Charge Converters (for use with sensors operating above 500 °F)

Model Number	422E35	422E36	422E38
Gain (Charge Conversion Sensitivity)	1 mV/pC ±2%	10 mV/pC ±2%	0.1 mV/pC ±2%
Input Range	±2500 pC	±250 pC	±25,000 pC
Output Voltage Range	±2.5 V	±2.5 V	±2.5 V
Frequency Response (-5%, 20 mA)	5 to 100k Hz	5 to 100k Hz	5 to 100k Hz
Resistance (Minimum required at input)	10,000 ohms	10,000 ohms	10,000 ohms

In-Line ICP®-Powered Charge Converters (for use in radiation environments)

Model Number	422E65/A	422E66/A
Gain (Charge Conversion Sensitivity)	1 mV/pC ±2%	10 mV/pC ±2%
Input Range	±5000 pC	±500 pC
Output Voltage Range	±5.0 V	±5.0 V
Frequency Response (-5%, 4 mA)	5 Hz to 35k Hz	5 Hz to 90k Hz
Radiation Exposure Limit - Gamma Fluence	≤ 1 Mrad	≤ 1 Mrad
Radiation Exposure Limit - Neutron Fluence	≤ 10 ¹⁰ N/cm ²	≤ 10 ¹⁰ N/cm ²
Resistance (Minimum required at input)	10,000 ohms	10,000 ohms

Notes

Use 023 hardline cable in radition area



Series 422E3x

Includes 10-32 jack input and BNC output connectors



Series 422E6x

Includes 10-32 jack input and output connectors



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PCB® Piezotronics Test & Measurement Electronics product offering includes signal conditioners and cabling for ICP® and charge output piezoelectric, MEMS-based, and full-bridge strain gage sensors. Battery-powered and line-powered signal conditioners are available, with a wide range of options, including gain, filtering, TEDS and integration functions. Stock cables for quick delivery and custom cables to meet any connection requirement are also available. Additional Test & Measurement products include sensors for acoustics, force, load, strain, torque, pressure, acceleration, shock, and vibration. PCB® products are backed by our **Total Customer Satisfaction** policy, which guarantees your satisfaction or your money refunded.

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