

DO YOUR CUSTOMERS DEMAND ZERO DEFECTS?

Simple Weld Force Monitoring System

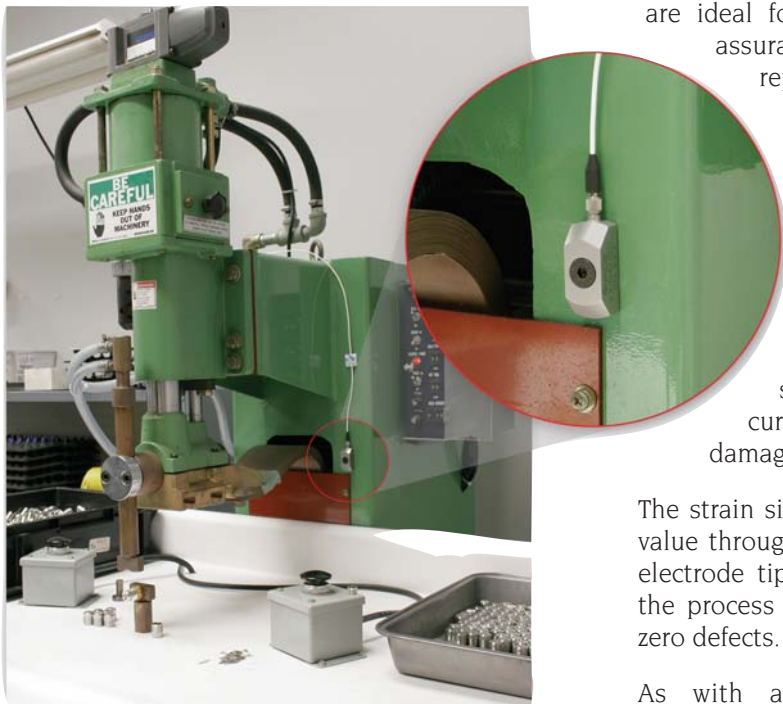
- Controls Electrode Clamping Force
- Triggers Weld Current to Cut Cycle Time
- Avoids Damage and Detects Wear of Electrode Tips
- Monitors and Documents Process Deviations
- Helps Ensure Weld Quality and Zero Defects

Simple monitoring systems, consisting of piezoelectric quartz ICP® strain sensors, connecting cables, and signal conditioners are ideal for industrial process control and product quality assurance applications that require the measurement of repetitive cycles. ICP® strain sensors feature high stiffness, sensitivity stability, repeatability, high resolution, extremely long lifetime, and robust packaging for harsh industrial environments.

Weld quality is directly affected by electrode clamping force. ICP® strain sensors may be used to verify that the clamping force has reached a desired minimum value before applying weld current. After reaching the minimum value, the strain signal is used to immediately trigger weld current, which cuts cycle time and avoids electrode damage due to premature activation.

The strain signal may also be used to control the desired force value throughout the weld cycle. Strain data is logged to trend electrode tip wear, capture process deviations, and document the process to help ensure delivery of high quality parts with zero defects.

As with all PCB® instrumentation, this equipment is complemented with toll-free applications assistance, 24-hour customer service, and is backed by a no-risk policy that guarantees satisfaction or your money refunded.



**Series M240 Strain Sensors
Monitor and Control Weld Forces
to Ensure Quality End Products**

 **PCB** PIEZOTRONICS^{INC.}
FORCE / TORQUE DIVISION

Total Customer Satisfaction Guaranteed



Specifications

ICP® Strain Sensors			
Model	M240A01	M240A02	M240A03
Performance			
Sensitivity (± 20%)	10 mV/με	50 mV/με	100 mV/με
Measurement Range	300 pk με	100 pk με	50 pk με
Low Frequency Range (-5%)	0.004 Hz	0.004 Hz	0.004 Hz
Broadband Resolution (1 to 10,000 Hz)	0.001 με	0.0002 με	0.0001 με
Environmental			
Temperature Range (Operating)	-65 to +250 °F (-54 to +121 °C)		
Electrical			
Output Bias Voltage	8 to 14 VDC		
Discharge Time Constant	≥ 150 sec		
Mechanical			
Sensing Element	Quartz		
Housing Material	Stainless Steel		
Electrical Connector	10-32 Coaxial Jack		
Sealing	Epoxy		
Mounting Torque	7.38 ft-lb (10 N-m)		
Size (Width x Length x Height)	0.67 x 1.81 x 0.6 in (17 x 46 x 15.2 mm)		
Supplied Accessories			
Model M081A100 M6 x 1.00 flathead screw			
Optional Versions (specify with prefix letter shown)			
J - Ground Isolated			



Series M240 ICP® Strain Sensors

ICP® Sensor Signal Conditioner	
Model	410A01
Performance	
Channels	1
Output Voltage (Instantaneous)	+/- 10 V
Output Voltage (Peak)	0 to 10 V
High Frequency Response	10 kHz
Low Frequency Response, AC coupled (-5%)	0.5 Hz
Low Frequency Response, DC coupled	0 Hz
Voltage Gain (Incremental Steps)	x0.5, x1, x2, x4, x8, x10, x16, x20
Environmental	
Temperature Range (Operating)	-60 to +110 °F (+15 to +45 °C)
Electrical	
Power Required (± 10%)	24 VDC
Current Draw	100 mA
Broadband Electrical Noise (1 Hz to 10 kHz)	20 μV rms
Peak Hold Reset	Solid State Relay
Discharge Time Constant (AC coupled)	1 sec
Mechanical	
Size (Width x Length x Height) in (mm)	3.58 x 4.41 x 0.91 (91 x 112 x 23)
Mounting	DIN Rail
Electrical Connector (Sensor Input)	SMA
Electrical Connection (Analog Output, Peak Output, Power, Ground)	Removable Screw terminals



Model 410A01 ICP® Sensor Signal Conditioner



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ISO 9001:2000 CERTIFIED

A2LA ACCREDITED to ISO 17025

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The Force/Torque Division of PCB® Piezotronics, Inc. specializes in the development, application, and support of piezoelectric and strain gage force sensors, load cells, and torque sensors for a wide range of research, test, measurement, monitoring, and control requirements. This product focus, coupled with the strengths and resources of PCB, permits the Force/Torque Division to offer exceptional customer service, 24-hour technical assistance, and a **Total Customer Satisfaction** guarantee.

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