

S251 Application Notes & Mounting Suggestions

General Description: The S251 Sensor is a family of monolithic aluminum or stainless steel bodied structures (depending on capacity) with a proprietary thin film technology strain gage applied, capable of producing a linear, analog voltage output in response to loadings of 0.2 Kg up to 10 Kg depending on the model chosen.

Physical Considerations:

Mounting: Two #4-40 or M3 x 0.5 (EU only) tapped mounting holes are provided through the end of the sensor body adjacent to the termination area. This end of the sensor should be rigidly mounted to a “mechanical ground” the surface contact of which should be limited to the mounting surface of the sensor.

Loading: Load forces may be applied in either direction to the free end of the sensor, perpendicular to its body length and on the center axis of the other tapped holes. For accuracy and repeatability, a single point of loading is best. The configuration of the S251 sensor provides for no inherent overload protection (loading in excess of 150% of rated capacity) therefore provisions should be designed into the application hardware to preclude excessive deflection and damage to the sensor.

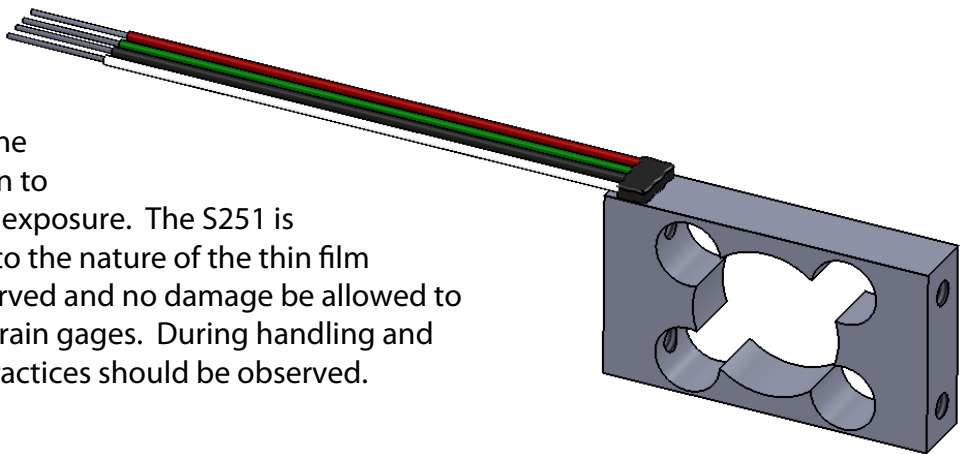
Wiring: Color coded lead wires are provided for electrical connections, however when extended, adequate forms of strain relieving should be provided in the assembly design.

Electrical Considerations:

Four resistive elements are created by proprietary thin film technology in a Wheatstone Bridge configuration and adjoining areas of strain concentration. The application of a load to the sensor causes an electrical imbalance between the resistive elements and produces an output voltage (typically in millivolts) that is linear and proportionate to the load applied. Less than the maximum excitation voltage may be used however the resulting output will be reduced proportionately.

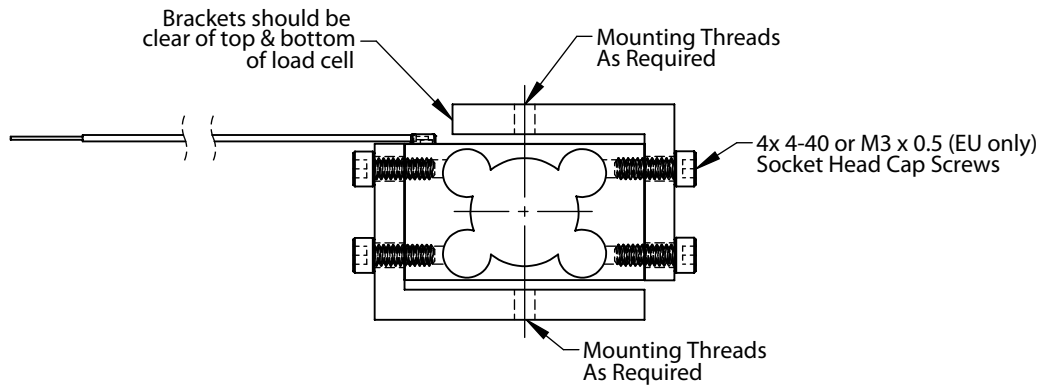
Environmental Concerns & Precautions:

While the thin film technology is itself immune to normal humidity levels, care must be taken to avoid condensing moisture and direct water exposure. The S251 is very stable over time and temperature. Due to the nature of the thin film technology, care in handling should be observed and no damage be allowed to occur especially in the area of the thin film strain gages. During handling and assembly procedures anti-static discharge practices should be observed.

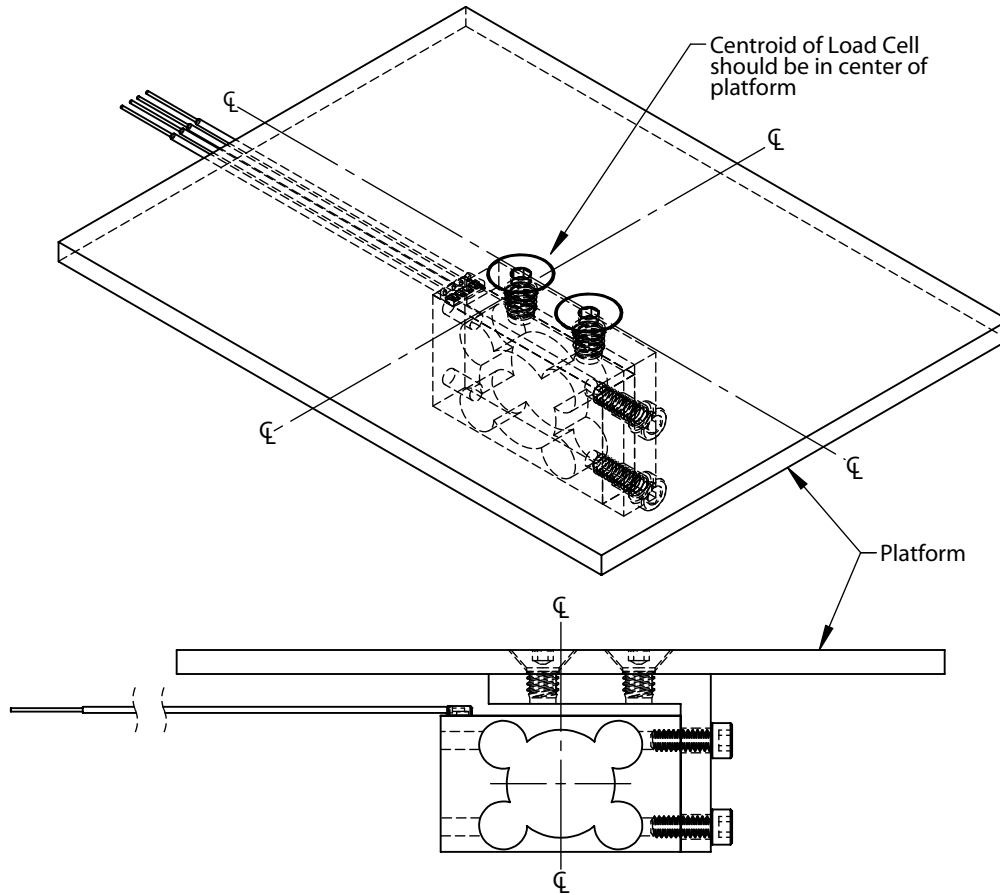


Recommended Mounting for S251 Sensors

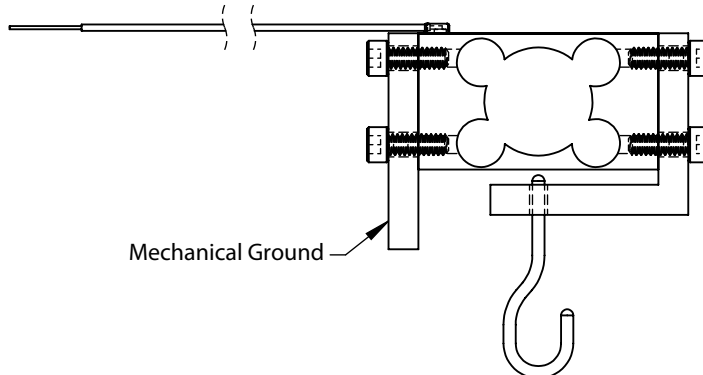
In-Line Sensing



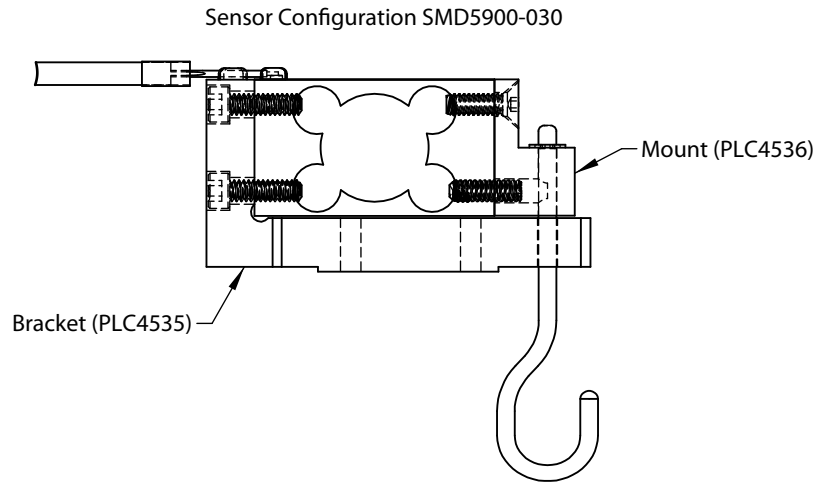
Scale (Platform)



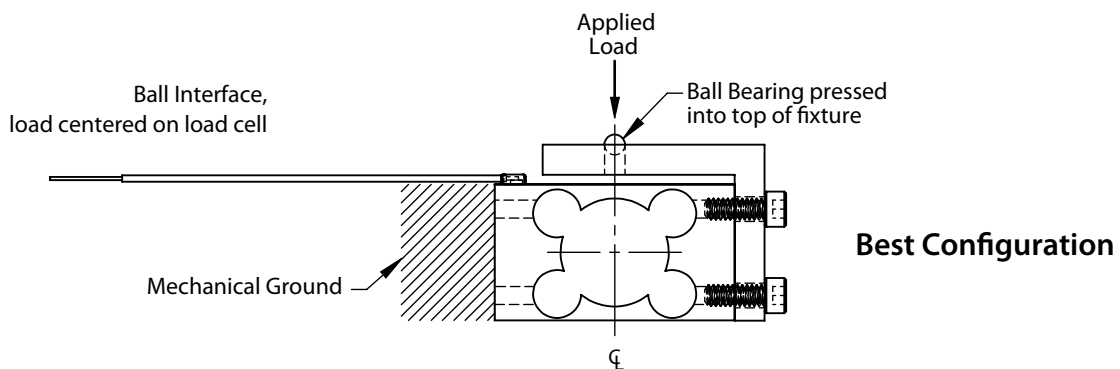
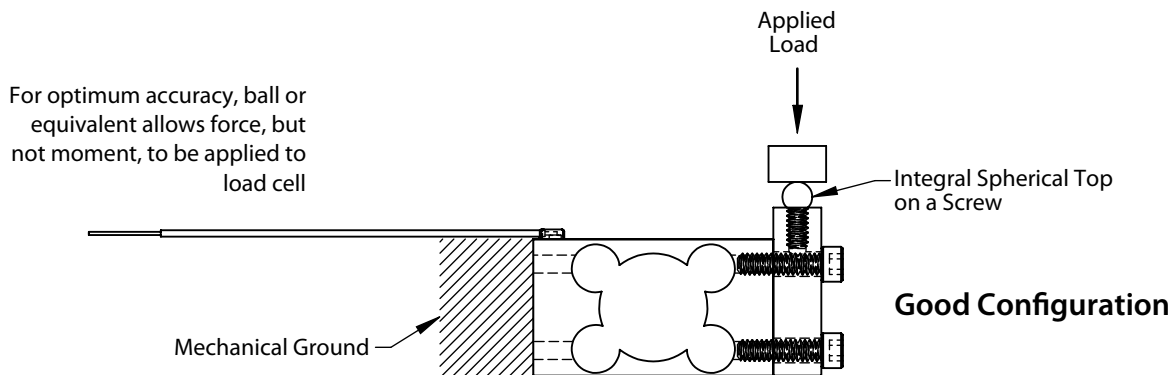
Hanging/Weight Scale



Hanging/Weight Scale



Compression Force



<u>Unless Otherwise Specified</u>			
Break Sharp Edges 0.003-0.015" Remove All Burrs. Surfaces to be Square &/or Parallel w/IN 0.005"		Break Sharp Edges 0.08-0.4" Remove All Burrs. Surfaces to be Square &/or Parallel w/IN 0.127"	
X/X = +/- 0.015"	.XXX = +/- 0.005"	.X = +/- 0.50 mm	Angles = +/- 2°
.X = +/- 0.03"	.XXXX = +/- 0.001	X.XX = +/- 0.30 mm	Surface Finish $\sqrt{0.8}$
.XX = +/- 0.01"	Angles = +/- 2°	X.XXX = +/- 0.15 mm	
Surface Finish $\sqrt{32}$			