



String Pot Sensor Datasheet

General Description

A String Pot or Draw Wire sensor are sensors used for vertical displacement material compression and creep monitoring. The sensors are typically packaged in a NEMA rated enclosure with an extended wire attached to it allowing it to span from floor to floor in a building. Depending on the expected travel, different models are available.

The compact size, wide variety of travel ranges and favorable price as compared to LVDTs make this sensor attractive in a variety of different applications.

See ASTM publication Volume 41, Issue 4 (July 2013) titled Monitoring of Vertical Movement in Four-Story Wood-Frame Building in Coastal British Columbia for detailed information on how String Pots can be used to monitor vertical displacement and compression of buildings.

Typical Applications

- Vertical displacement monitoring
- Wood compression monitoring

Features

- 50mm Measuring Range used for floor to floor compression
- 250mm Measuring Range used for full building and large scale monitoring
- Compatible with SMT WiDAQ and A3/A2 Dataloggers
- Mounted in NEMA rated enclosure with ½" conduit interface
- Draw wire extensions available up to 300 feet
- Different terminations and hook boxes are available depending on the mounting requirements

Ordering Information

String Pot – Measuring Range 50mm	SPOT-00-50mm
String Pot – Measuring Range 250mm	SPOT-00-250mm

Specifications SPOT-00-50mm

Measuring Range	50mm
Linearity (conductive plastic pot)	$\pm 0.5\%$ FSO
Resolution (with A3/WiDAQ)	0.1mm

Specifications SPOT-00-250mm

Measuring Range	250mm
Linearity (wire pot)	$\pm 0.25\%$ FSO
Resolution (with A3/WiDAQ)	0.1mm

Environmental

Operating Temperature	-20° to 80°C
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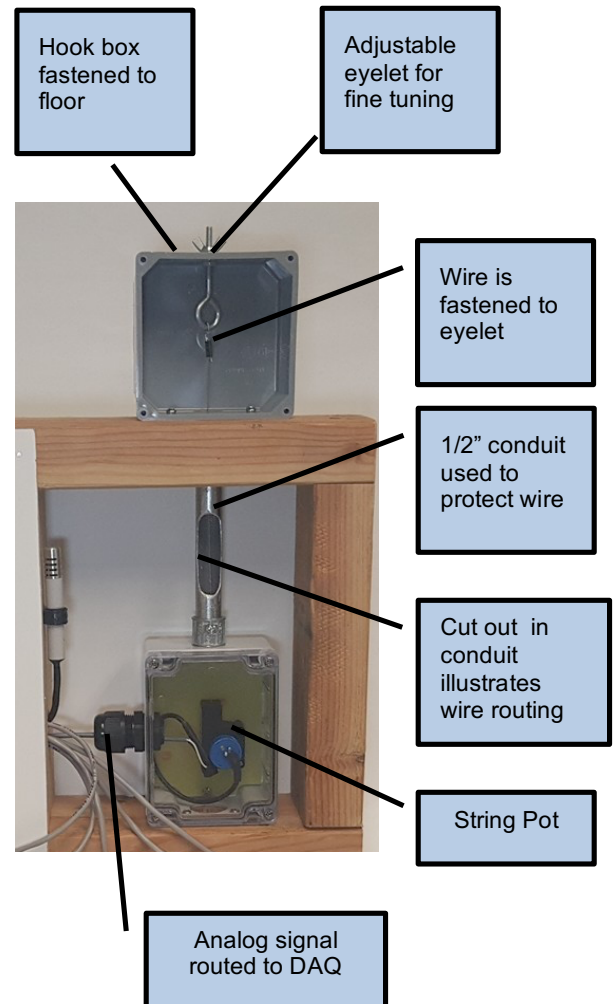
Mechanical

Material	Housing: Plastic Draw wire: stainless steel
Wire Mounting	Eyelet
Housing	NEMA rated enclosure with grommet for analog wire.
Wire Acceleration	$\sim 5g$
Wire Retraction Force (min)	$\sim 1N$
Wire Extension Force (max)	$\sim 2.5N$

Specifications are subject to change without notice

String Pot Installation

Example installation of a String Pot connected to hook box on upper floor. Model is scaled down for illustration purposes.

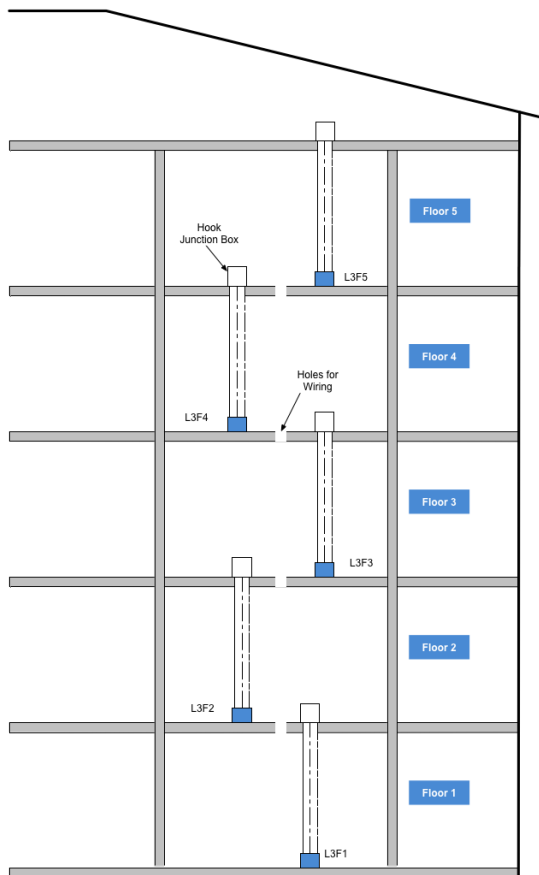


As shown above the string pot is connected to a non-stretch stainless steel cable and crimped to an adjustable eyelet at the desired location. As the building compresses the draw wire will re-coil causing a change in resistance that is directly proportional to distance.

Route the analog wire to an A3 or WiDAQ DAQ configured to measure milliohms.

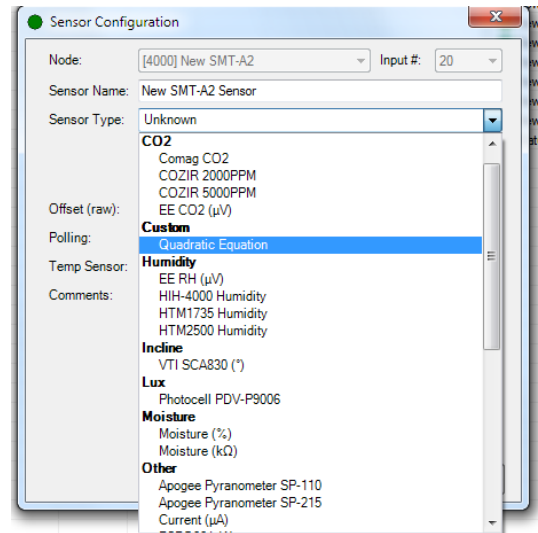
Typical String Pot deployment for monitoring compression in a multi-storey building

Typical string pot layout used to monitor compression on each floor. It is possible to use the 250mm string pot and do the entire building however the complications to keep the vertical hole straight and not disturbed is very difficult.



Gateway Configuration

Right click on the String Pot sensor input and select *Configure*. Click on *Sensor Type* drop down menu and select *Quadratic Equation*:



Enter the value 0.00005 for the x coefficient. Results will be in millimeters (mm).

Zero the String Pot

- Perform calibration **after** installation.
- Record at least 5 readings, right click on the sensor and select *Calibrate*.
- Highlight readings by contracting/expanding the graph and select *Calibrate*.

