

MicroStrain Sensing Technical Note

SG-Link-200® Connecting and calibrating mV/V sensors

Component Overview

The SG-Link-200-OEM is a 2-channel wireless analog sensor node with 1 differential input channel (strain channel) designed to support strain gauges and load cells.



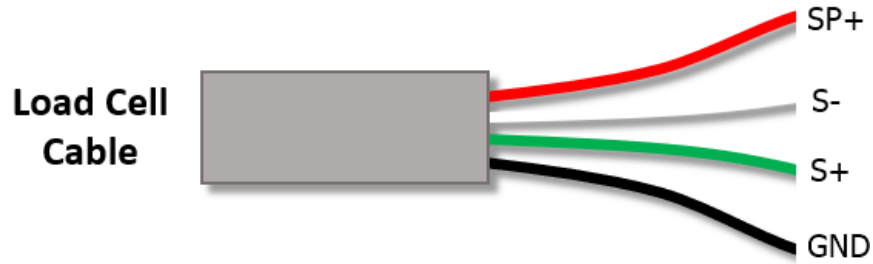
Series MIN800 Miniature Tension/Compression Loadcell with 2 mV/V Output sensitivity and 100 LBF full scale range used for the following examples.



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Connecting the Load Cell to the SG-Link-200-OEM

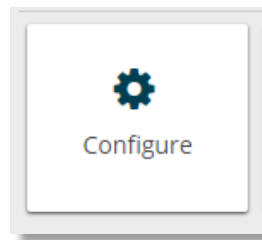
1. Connect the wires of the sensor to one of the SG-Link-200-OEM differential input channels (channels 1-3) according to the below diagram (reference the [SG-LINK-200-OEM Quick Start Guide](#)):



Note: If the output goes down when load is applied to the sensor reverse the green and white wires in the SG-Link-200-OEM.

Configuring the SG-Link-200-OEM in SensorConnect

1. Open SensorConnect and power on the SG-Link-200-OEM.
2. From the node list select the node being tested.
3. Click on the **Configure** tile under the Control options.



4. Take the sensitivity of the sensor and multiply it by the channel excitation voltage. In the case of the SG-Link-200-OEM the excitation voltage is **2.5V**. The result of this will allow you to select the appropriate Input Range. See the below example.

Example:

Loadcell output sensitivity:	2mV/V
Excitation voltage:	2.5V
Result:	$2\text{mV/V} \times 2.5\text{V} = 5.0\text{mV}$

In this example you would want to select **+/- 19.532mV** from the Input Range dropdown options.

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Excitation Voltage ? 2.5 V

Input Range ?

Channel(s)	Input Range
Differential (ch1)	±19.532 mV Gain: 4
Differential (ch2)	±312.5 mV Gain: 8
Differential (ch3)	±156.25 mV Gain: 16
	±78.125 mV Gain: 32
	±39.063 mV Gain: 64
	±19.532 mV Gain: 128

Low Pass Filter ?

Channel(s)

Differential (ch1-ch3)

5. Click on the **Calibration** tab.

Hardware Calibration ! Sampling Power

Excitation Voltage ? 2.5 V

Input Range ?

Channel(s)	Input Range
Differential (ch1)	±19.532 mV
Differential (ch2)	±39.063 mV
Differential (ch3)	±39.063 mV

6. Click on **Cal Tools**, then select **mV/V**.

Hardware Calibration ! Sampling Power

Linear Calibration ?

Channel(s)	Unit	Calibration
Differential (ch1)	Microstrain	$= (-1.8025e-3 \times \text{bits}) + 17354.752$
Differential (ch2)	Microstrain	$= (-1.7594e-3 \times \text{bits}) + 15604.3584$
Differential (ch3)	Microstrain	$= (-1.7419e-3 \times \text{bits}) + 15488.2051$

Cal Tools !

- Strain
- mV/V
- Manual
- Tare

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7. Enter the sensor's output sensitivity into the **mV/V max capacity** input field.
8. Enter the sensor's full-scale range into the **Max Capacity** input field.
9. Enter the Unit desired from the drop-down menu.

mV/V Calibration ×

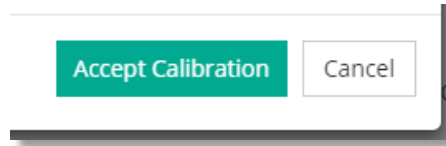
Node: 32743, Channel: ch1 - Differential (ch1)

Sensitivity: mV/V

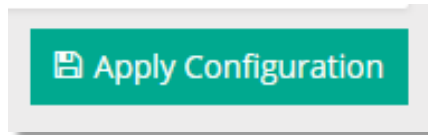
Max Capacity:

Slope: 4.6566e-5 lbs/bit
Offset: -390.625 lbs
Effective Range: -390.625 to 390.625 lbs

10. Click on **Accept Calibration**.

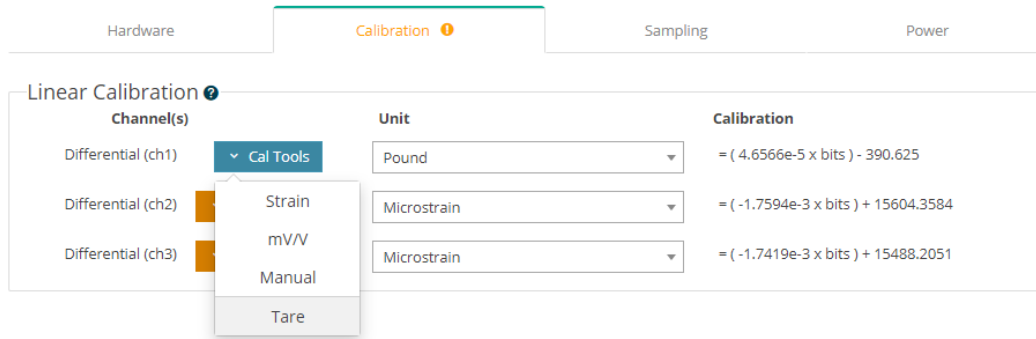


11. Click on **Apply Configuration**.

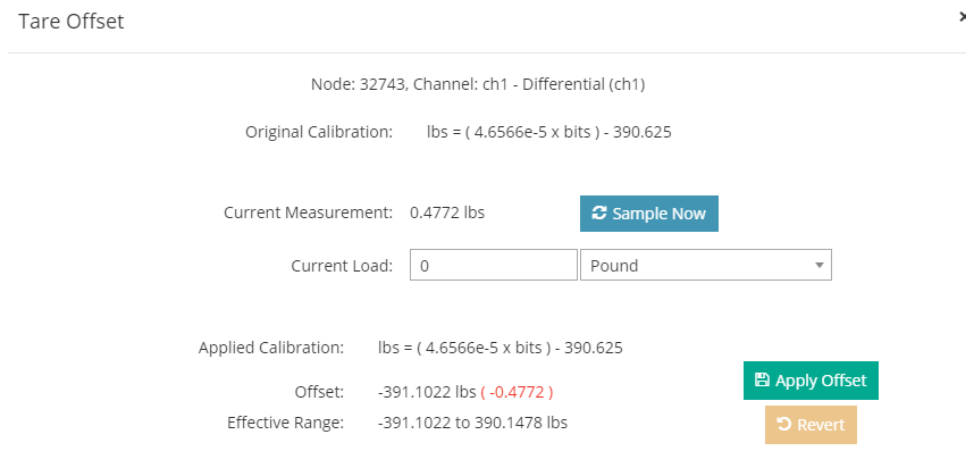


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12. Go back to the **Cal tools** and Select **Tare**

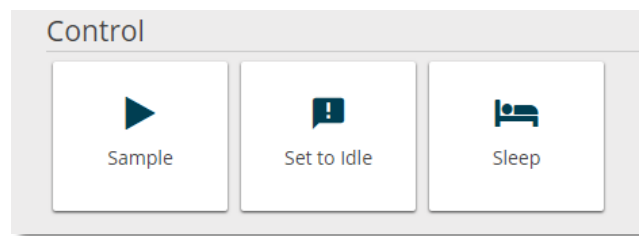


13. With no load on the load cell (or to zero out with a pre-loaded sensor) Click the **Sample Now** button (a good idea here is to click the Sample Now button several times and observe the current Measurement remains approx. same value).



14. Click the **Apply Offset** button to write the value to the node.

15. Under the Device section, click on the node, then click on the **Sample** tile from the Control panel.



16. Enable the channel being tested with the Sensor and the other sampling desired.

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Network Settings: Synchronized Lossless Protocol: LXRS

<input checked="" type="checkbox"/>	Node	Channels	Sampling	Data Type	Log/Transmit	% Total	Status
<input checked="" type="checkbox"/>	32743	1 active	64 Hz continuously	float	Transmit	3.13%	✓ Ok

- Raw Channels
- Differential (ch1)
- Differential (ch2)
- Differential (ch3)

17. Once node is all configure Click **Apply and Start Network**.

Apply and Start Network

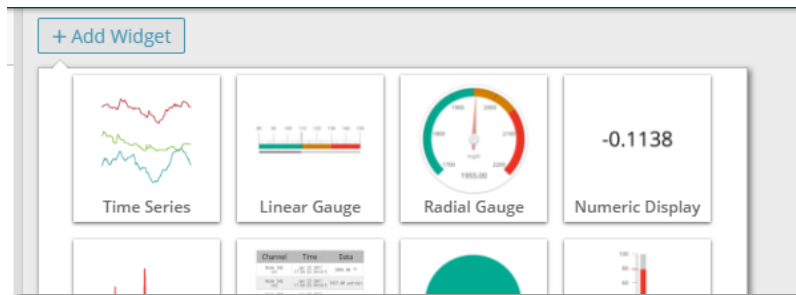
18. Click the **Data** tab, then click on **+Add Widget**.

Empty Dashboard

This Dashboard does not have any Data Widgets.

+ Add Widget

19. Select the **Time Series** widget.

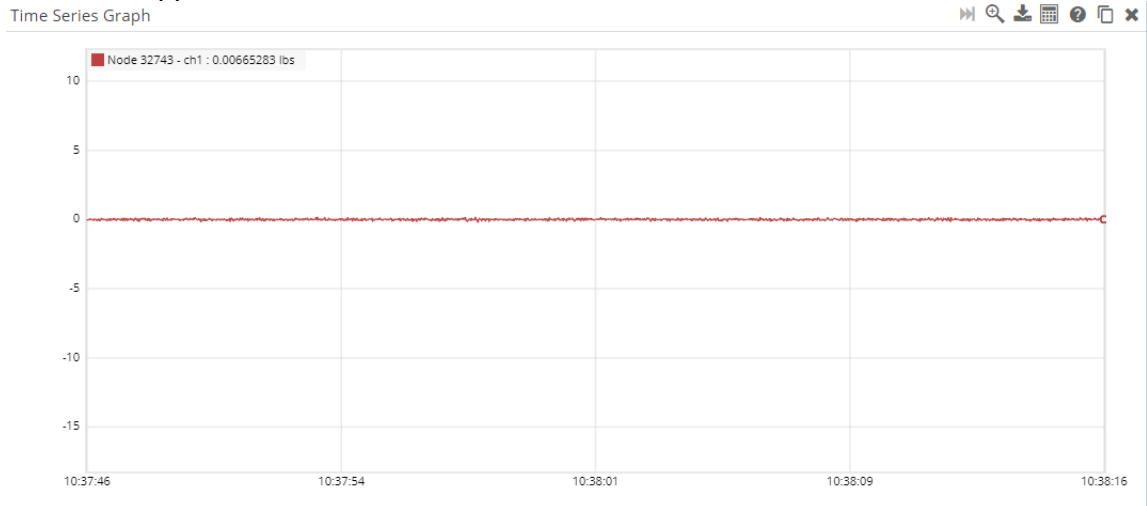


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20. Select the node and channel to view the data output in the time series widget.

- ▼ Node 32743 ●
- ch1 ●
- ch2
- ch3

21. With no load (or at the pre-loaded value the channel was Tared at) the data coming in should be approx. zero



22. If possible, place known loads on the sensor to verify calibration.