

LORD TECHNICAL NOTE

V-Link-200[®] Connecting and calibrating mV/V sensors

Component Overview

The V-Link-200 is an 8-channel wireless analog sensor node with 4 differential input channels (strain channels) designed to support strain gauges and load cells.

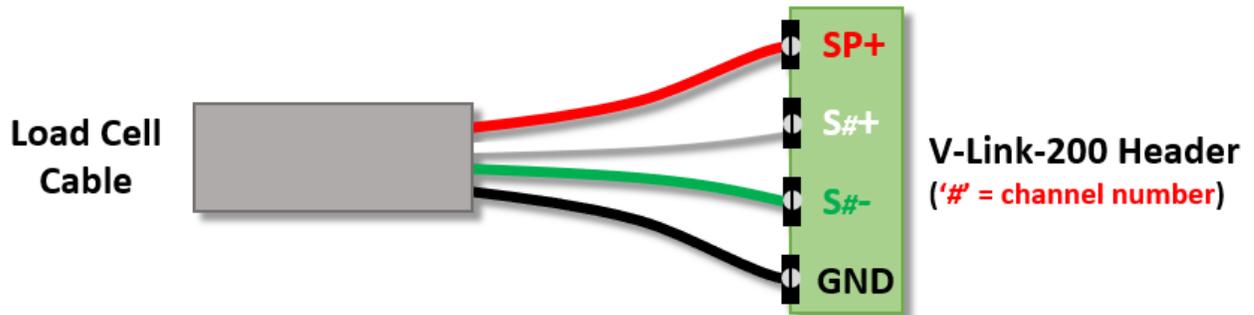


Series MIN800 Miniature Tension/Compression Loadcell with 2 mV/V Output sensitivity and 100 LBF full scale range used for the following examples.



Connecting the Load Cell to the V-Link-200

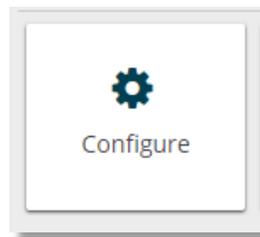
1. Connect the wires of the sensor to one of the V-Link-200 differential input channels (channels 1-4) according to the below diagram:



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

Configuring the V-Link-200 in SensorConnect

1. Open SensorConnect and power on the V-Link-200.
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 V-Link-200 the excitation voltage is **4.096V**. 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:	4.096V
Result:	$2\text{mV/V} \times 4.096\text{V} = 8.129\text{mV}$

In this example you would want to select **+/- 9.76mV** from the Input Range dropdown options.

Hardware Calibration Sampling

Input Range

Channel(s)	Input Range
1 - Differential 1	±9.76 mV (Gain: 256)
2 - Differential 2	±156 mV (Gain: 16)
3 - Differential 3	±78.1 mV (Gain: 32)
4 - Differential 4	±39 mV (Gain: 64)
5 - Single-ended 1	±19.5 mV (Gain: 128)
6 - Single-ended 2	±9.76 mV (Gain: 256)
7 - Single-ended 3	±4.88 mV (Gain: 512)
8 - Single-ended 4	±2.44 mV (Gain: 1024)
	±1.22 mV (Gain: 2048)
	0 to 5.12 V
	0 to 5.12 V

5. Under the Hardware Offset options select **Mid (50%)** from the Balance Target dropdown for the corresponding channel.

Hardware Offset

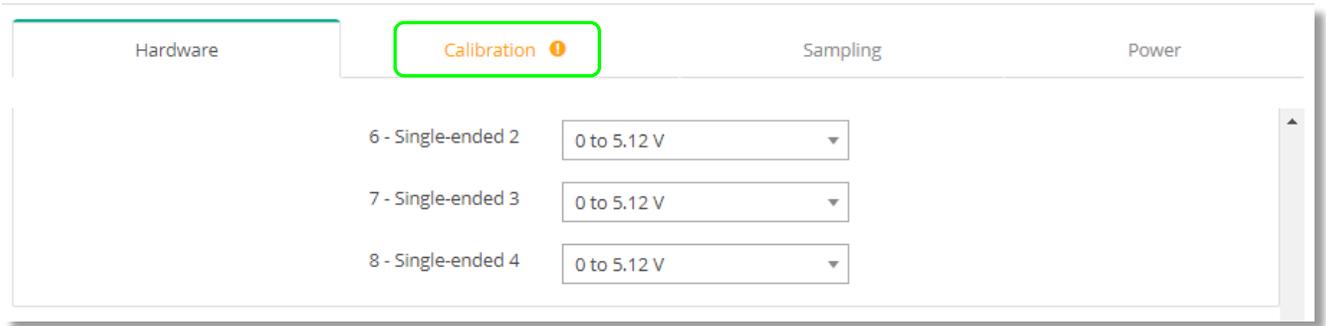
Channel(s)	Offset	Balance Target
1 - Differential 1	626	Mid (50%) Auto Balance
2 - Differential 2	626	High (75%) Auto Balance
3 - Differential 3	625	Mid (50%) Auto Balance
4 - Differential 4	626	Mid (50%) Auto Balance

6. With no load on the sensor, click **Auto Balance**. The channel should achieve approx. 50%, as shown:

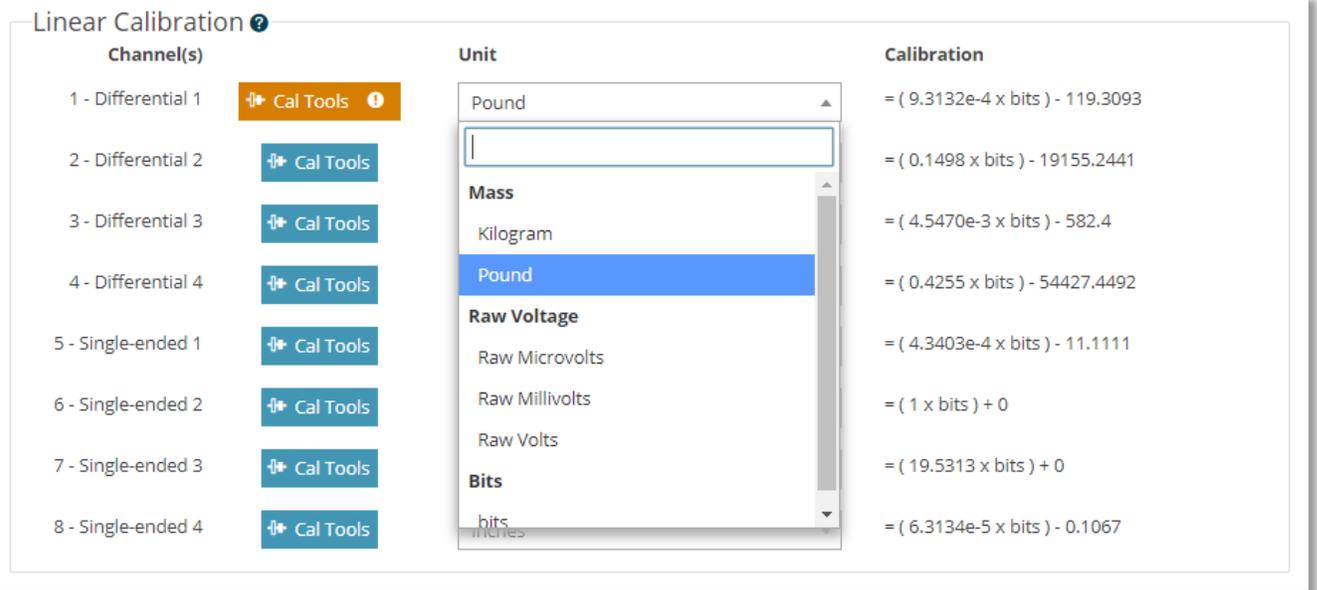
Hardware Offset

Channel(s)	Offset	Balance Target
1 - Differential 1	626 Auto balance complete (achieved: 50.01%)	Mid (50%) Auto Balance
2 - Differential 2	626	Mid (50%) Auto Balance
3 - Differential 3	625	Mid (50%) Auto Balance
4 - Differential 4	626	Mid (50%) Auto Balance

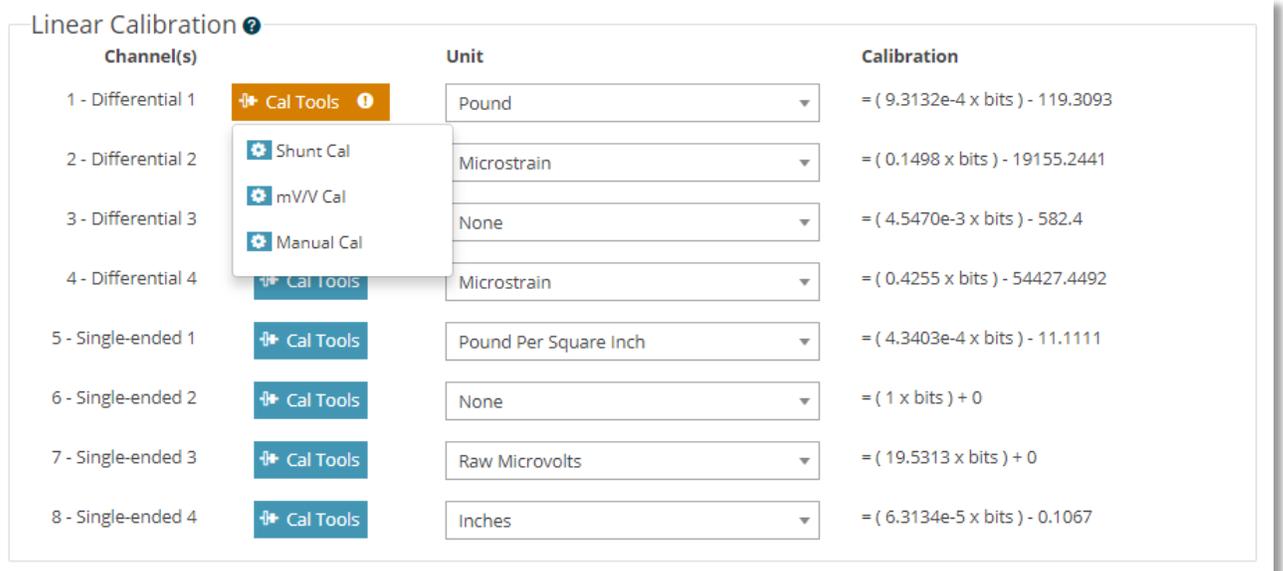
7. Click on the **Calibration** tab.



8. Select the desired unit of measure from the **Unit** dropdown.



9. Click on **Cal Tools**, then select **mVV Cal**.



10. Enter the sensor's output sensitivity into the **mV/V max capacity** input field.

mV/V Calibration

Node: 442, Channel: ch1 - Differential 1

mV/V at max capacity

Max Capacity:

Balance Target:

Slope: 9.3132e-6 lbs/bit
Offset: -1.1921 lbs
Effective Range: -1.1921 to 1.2493 lbs

11. Enter the sensor's full scale range into the **Max Capacity** input field.

mV/V Calibration

Node: 442, Channel: ch1 - Differential 1

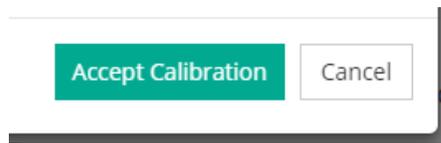
mV/V at max capacity

Max Capacity:

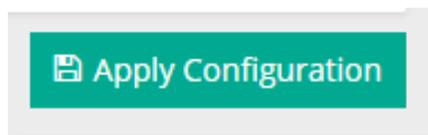
Balance Target:

Slope: 9.3132e-4 lbs/bit
Offset: -119.2093 lbs
Effective Range: -119.2093 to 124.9313 lbs

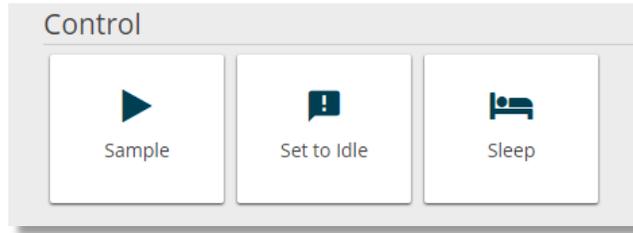
12. Click on **Accept Calibration**.



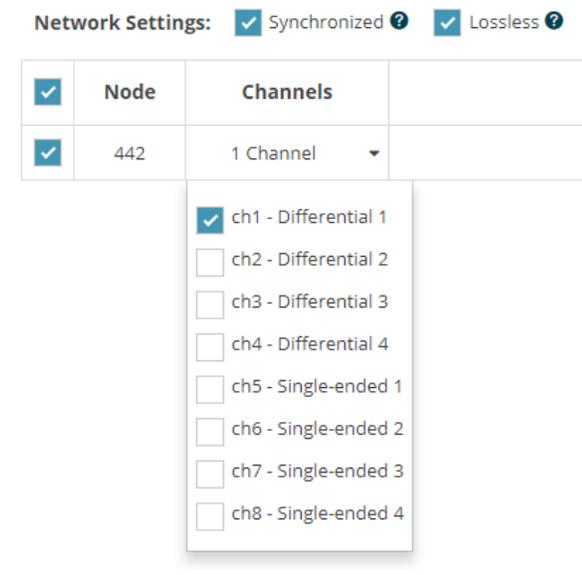
13. Click on **Apply Configuration**.



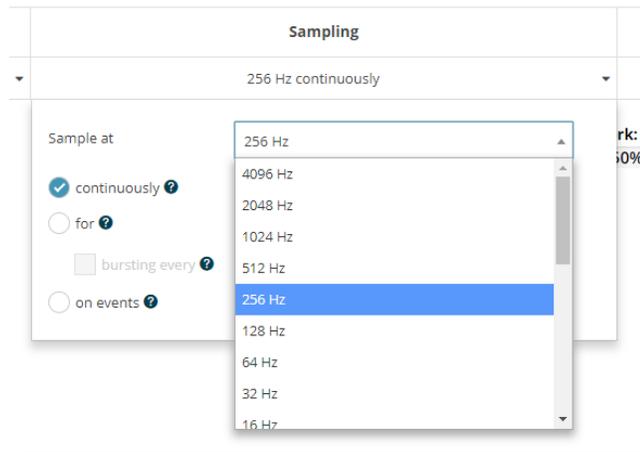
14. Click on the node, then click on the **Sample** tile from the Control panel.



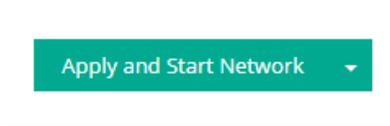
15. Enable the channel being tested with the Sensor.



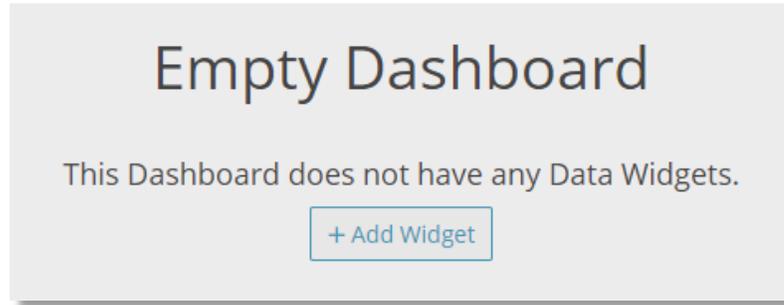
16. Select the desired sample rate from the **Sampling** options.



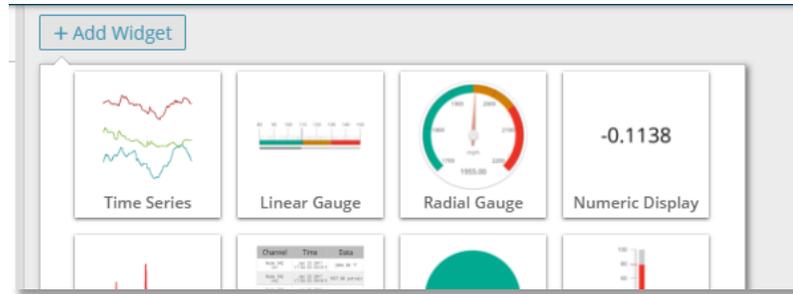
17. Click **Apply and Start Network**.



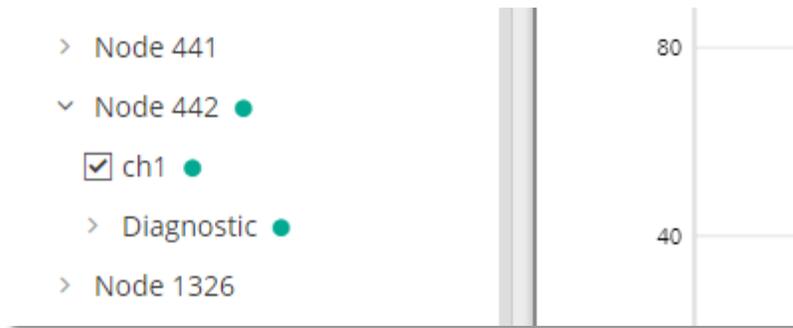
18. Click the **Data** tab, then click on **+Add Widget**.



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



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



21. Apply load to the sensor to verify the output. The output should read in LBS for this example.