LORD TECHNICAL NOTE

V-Link®-LXRS® and SG-Link®-LXRS®

Measuring Voltages Above 3 Volts

Overview

The LORD MicroStrain® V-Link®-LXRS® Wireless 7 Channel Analog Input Sensor Node has 3 single ended input channels (channels 5, 6 and 7) which are designed to measure 0-3 volt DC sensors. The SG-Link®-LXRS® Wireless 2 Channel Analog Input Sensor Node has 1 single ended input channel (channel 4) which is likewise designed to measure 0-3 volt DC sensors. Measuring sensors (and voltages) with ranges above 3 volts can still be accomplished with the V-Link®-LXRS® and SG-Link®-LXRS® by following this general set of instructions. This technical note explains measurement of a regulated power supply using V-Link®-LXRS® and Node Commander® software; the SG-Link®-LXRS® mirrors the instruction.

Calculate Resistors

- For purposes of this example we are measuring 0 to 10 volts DC from a regulated power supply.
- Download our Voltage Divider Calculator here. It is a Microsoft Excel spreadsheet (.xlsx).
- Select the resolution of your device (12 or 16 Bit).
- Enter the Maximum expected voltage to measured, in our example case, 10 volts.
- We recommend that the R2 resistor that you will be required to use in this setup has a 10 Kohm value.
- Measure the 10 Kohm resistor that you supply and enter its exact resistance value; in our example the resistor measures 10030 ohms.
- Enter this value as the Actual R2 Value.
- You will now note that the value needed for the R1 resistor has been calculated at 23403 ohms.
- Procure a resistor that has a value as near to the calculated R1 value as possible; in our example we supplied a 2.49 Kohm resistor which has an exact measured value of 24820 ohms.
- Enter the actual measured resistance as the Actual R1 value.
- You will now note that the Maximum Vin (do not exceed) = 10.42 volts.
- Insure with this particular configuration that you do not input a voltage greater than 10.42 volts; at minimum, you will rail the system, worst case may result in damage.
- You will now observe that we have now calculated a Slope of 0.002545 to use in Node Commander®.

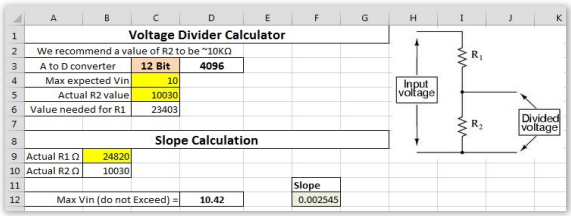

Figure 1: *Voltage Divider Calculator*

Setup

- Connect one leg of R1 and one leg of R2 into Ain5 of the V-Link®-LXRS® connector terminal.
- Connect the other leg of R2 to GND of the V-Link®-LXRS® connector terminal.
- Connect the positive (+) lead of the input voltage (from the power supply in our example) to other leg of R1.
- Connect the negative (-) lead of the input voltage to GND of the V-Link®-LXRS® connector terminal.

Configure Node

- Establish communication as normal between the V-Link®-LXRS® and Node Commander® software.
- Right-click the node and a drop-down menu will appear.
- Click Configure.
- Click Configure Node and the Configuration screen will appear.
- Click the Channels tab.
- Enable channel 5 only by clicking the checkbox; disable all other channels.

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- Select Volts in the Class drop-down.
- Select V in the Units drop-down.
- Click the Modify button.
- Enter our calculated Slope of 0.002545 and enter 0 as the Offset.
- Click the Lock button.
- Click OK and the Channel 5 Configuration screen will disappear.
- Click the Streaming tab.
- Uncheck the Continuous Streaming checkbox.
- Enter a Sweeps value of 10000 (~13 seconds).
- Click Apply.
- Click OK and the Configuration screen will disappear.

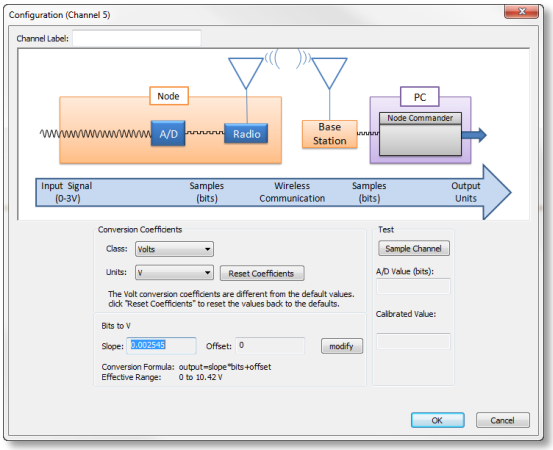

Figure 2: *Channel 5 Configuration*

Take Measurements

- In our example, we set the power supply to output 9.17 volts.
- Right-click the node and a drop-down menu will appear.
- Click Sample.
- Click Stream.
- Click Start and the V-Link®-LXRS® will start real time streaming.
- As we see in our graph in figure X, the voltage is reported as ~9.17 volts.

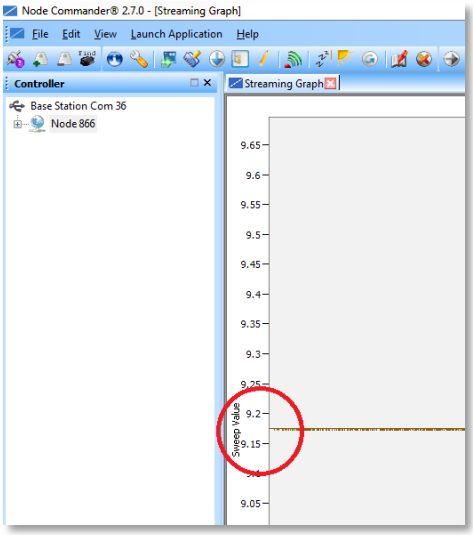

Figure 3: *Streaming Graph Showing ~9.17 volts*

Caution

As always, use good judgment and best practices when working with power supplies and other power sources.

Support

LORD MicroStrain® support engineers are always available to expand on this subject and support you in any way we can.

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