

V-Link[®]-LXRS[®]

Event Driven Sampling

Overview

The LORD MicroStrain[®] V-Link[®]-LXRS[®] Wireless 7 Channel Analog Input Sensor Node has been upgraded to support the new Event Driven Sampling feature. This feature allows even greater flexibility in handling sensor driven sampling. This technical note provides a step-by-step guide to its use and assumes the user is familiar with V-Link[®]-LXRS[®] and Node Commander[®] software operation.



Figure 1: V-Link[®]-LXRS[®]

Does my V-Link[®]-LXRS[®] support Event Driven Sampling?

Event Driven Sampling is available on V-Link[®]-LXRS[®] with serial number 2433-0001 and greater. V-Link[®]-LXRS[®] with lesser serial numbers or V-Link[®]-mXRS[®] can NOT be upgraded. The new functionality flows from a hardware change. In addition, Node Commander[®] [software version 2.10.0](#) or greater must be installed.

Synchronized Sampling Only

Event Driven Sampling is operational with Synchronized Sampling only. It is not available for Streaming, Low Duty Cycle or Datalogging.

Step 1

- Launch Node Commander[®] and establish communication with the V-Link[®]-LXRS[®] as normal; in our example, our node address is 99.
- Right-click the Node and a drop-down menu appears.
- Click Configure.
- Click Configure Node and the Configuration window appears.
- Click the Channels tab.
- In our example, we are enabling channel 1 which has a 1000 ohm full bridge strain gauge mounted, and channel 2 which has a 350 ohm full bridge strain gauge mounted. These strain gauges have been previously calibrated using the Strain Wizard[®].
- Click Apply.

Step 2

- Click the Streaming tab.
- Uncheck the Continuous Streaming checkbox.
- Set a Time Duration of ~10 seconds.
- Click Apply.
- Click OK and the Configuration window disappears.

Step 3

- Ensure that the strain gauges connected to the V-Link[®]-LXRS[®] are in their un-flexed (zero) position and will remain that way during this step.
- Right-click the Node and a drop-down menu appears.
- Click Sample.
- Click Stream, the Streaming Graph will appear and channels 1 and 2 will plot left to right over 10 seconds.
- When the Streaming stops, observe each channel's output and note the value. In our example both channels are observed to be ~0 μ strain, as expected.
- Click the red X on the Streaming Graph to close it.

Step 4

- Right-click the Node and a drop-down menu appears.
- Click Configure.
- Click Configure Node and the Configuration window appears.
- Click the Synchronized Sampling tab.
- Uncheck the Burst Sampling checkbox; Burst Sampling can NOT be used for Event Driven Sampling.
- Set a Sample Rate of 128 Hz (as an example).
- Check the Unlimited Sample Duration checkbox; disregard the Time Duration setting.
- Check the Event Driven Sampling Enable checkbox and the Configure Event Driven Sampling window will appear.
- Enter 30 seconds in the Pre-event Duration number scroll box; this 30 seconds represents the number of seconds that the V-Link[®]-LXRS[®] will record sensor data prior to the Trigger event.
- Enter 60 seconds in the Post-event Duration number scroll box; this 60 seconds represents the number of seconds that the V-Link[®]-LXRS[®] will record sensor data following the Trigger event.
- Select the checkbox for Channel 1.
- Select *greater than* (>) in the Trigger Operation drop-down.
- Enter 50 μ strain in the Trigger Value textbox; these two settings will cause Synchronized Sampling to commence when the strain gauge on Channel 1 exceeds 50 μ strain.
- Select the checkbox for Channel 2.
- Select *less than* (>) in the Trigger Operation drop-down.
- Enter -75 μ strain in the Trigger Value textbox; these two settings will cause Synchronized Sampling to commence when the strain gauge on Channel 2 exceeds -75 μ strain.
- Click OK and the Configure Event Driven Sampling window disappears.
- Click OK and the Configuration window disappears.
- To iterate: the V-Link[®]-LXRS[®] is now set to record 30 seconds of sensor data from channels 1 and 2 prior to a trigger event and 60 seconds of sensor data from channels 1 and 2 following a trigger event (90 seconds total). The trigger will occur if the strain gauge on channel 1 exceeds 50 μ strain ...OR... if the strain gauge on channel 2 exceeds -75 μ strain.

Step 5

- Right-click the Node and a drop-down menu appears.
- Click Sample.
- Click Synchronized Sampling and the Synchronized Sampling window appears.
- Click Apply Network Configuration and the status will report Ready to Start.
- Click Start Sampling.
- Click the red X on the Synchronized Sampling window and it disappears.
- Observe that the green Activity LED on the V-Link[®]-LXRS[®] is off, indicating the node is awaiting a sensor trigger event.
- In our example we activate the channel 1 strain gauge to drive it above 50 μ strain.
- The node immediately begins reporting sensor data on channels 1 and 2 in the Data Grid.
- After the 60 second Post-event Duration finishes, the sensor data will cease.
- Right-click the Node in the Data Grid and a drop-down menu appears.
- Click Save Stream and the Save As dialog box appears.
- Rename your data file and navigate to your data folder (or accept defaults), click Save, and the Save As dialog box disappears.

Step 6

- Open and analyze the data file.
- You will note that there is 90 seconds of data from channels 1 and 2.
- You will also note that the sensor on channel 1 went above 50 μ strain at the 30 second mark!

Other details

- Our example method used Synchronized Sampling set to Transmit only. You can also use Datalog only or Transmit and Datalog.
- If you set the trigger to a value that causes the V-Link[®]-LXRS[®] to continuously fire Synchronized Sampling so that you lose communication with the node, you can use the SUMO method to regain communication. To SUMO the node: Using the On/Off switch on the node enclosure, rapidly and in one continuous motion, turn it off, turn it on, turn it off, turn it on. This action will bypass the trigger mechanism and bring the node to idle state. Once in idle, use Node Commander[®] to disarm the offending trigger value.

Support

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