Wireless Nodes

Powering a Wireless Node with Sources Greater Than 9 Volts

Overview

Certain LORD MicroStrain® wireless sensor nodes may be powered externally. In many cases, longer life/higher capacity batteries are mounted adjacent to the node. In some applications, it may be advantageous to use other available power sources. For example, if one were to deploy wireless sensor nodes on a piece of heavy equipment, being able to use the existing 12 VDC vehicle electrical system would be valuable. If one were to deploy wireless sensor nodes on a bridge that had 12 or 24 VDC solar panels, being able to use the solar power would be valuable. As Table 1 shows, a limiting factor is the upper range of the supply voltage that the nodes will accept, i.e., in most cases, it is 9.0 VDC. By using a simple technique, these higher range 12 and 24 VDC power sources can be used. This technical note discusses the technique and assumes familiarity with LORD MicroStrain® wireless sensor systems.

Wireless Node	Supply Voltage Range	Wireless Node	Supply Voltage Range
SG-Link®-LXRS®	+3.2 to +9.0 VDC	SG-Link®-OEM-LS	+3.2 to +9.0 VDC
V-Link®-LXRS®	+3.2 to +9.0 VDC	TC-Link®-6CH-LXRS®	+3.2 to +9.0 VDC
G-Link2™-LXRS®	+2.2 to +5.0 VDC	TC-Link®-1CH-LXRS®	+3.2 to +9.0 VDC
G-Link®-LXRS®	+3.2 to +9.0 VDC	DVRT-Link™-LXRS®	+3.2 to +9.0 VDC
RTD-Link™-LXRS®	+3.2 to +9.0 VDC	TC-Link®-OEM	+3.2 to +9.0 VDC
SG-Link®-OEM-LXRS®	+3.2 to +9.0 VDC		

***Table 1**: Wireless Nodes and Supply Voltage Ranges*

Step-Down Voltage Regulator

A step-down voltage regulator generates lower output voltage from higher input voltage. As an example, the Pololu 5V, 600 mA Step-Down Voltage Regulator, model 2107 takes an input voltage of between 7 VDC to 42 VDC and reduces it to 5 VDC. The 2107 measures 0.4" x 0.5" and is very reasonably priced. The four connections are labeled on the back side of the PCB, and they are arranged with a 0.1″ spacing along the edge of the board for compatibility with solderless breadboards, connectors, and other prototyping arrangements that use a 0.1″ grid. You can also solder wires directly to the board or solder in either the 4×1 straight male header strip or the 4×1 right-angle male header strip included with the regulator.

Figure 2:
Step-down Voltage Regulator

Wiring the Regulator

- Let's assume we want to power a V-Link®-LXRS® with a typical 12 volt car battery; all other wireless nodes follow this same method.
- An appropriate 2-wire barrel connector with a pigtail lead is used to connect to the V-Link®-LXRS® power port.
- Two alligator clips with pigtail leads are used to connect to the battery posts.
- The leads from the connector and the alligator clips are soldered to the regulator as shown in Table 2.
- Figure 2 shows our actual setup.

Connection	Lead	Regulator
Positive post on 12 volt battery	Red alligator clip lead	VIN
Negative post on 12 volt battery	Black alligator clip lead	GND
Center pin of V-Link®-LXRS® barrel connector	Barrel connector power lead	VOUT
Shell of V-Link®-LXRS® barrel connector	Barrel connector ground lead	GND

***Table 2**: Connections to the Regulator*

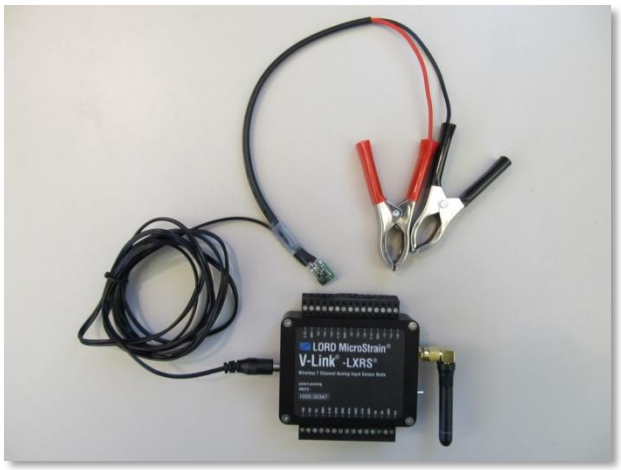

***Figure 2**: V-Link®-LXRS®, barrel connector, regulator and alligator clips*

WARNING

The V-Link®-LXRS® has a switch that sets the power to internal or external. The switch must be in the EXTERNAL position before connecting external power. Failure to do so may cause damage, overheating or fire. Please review our technical note *Using External Power with Wireless Sensor Nodes* before applying external power.

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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