

# MicroStrain® Quick Start Guide



## SG-Link® 350 ohm Tester Board

Firmware Version 6.03 and higher  
Software Version 1.5.26 and higher  
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### Overview

- The 350 ohm Tester Board provides a precise instrument by which to test the differential input channel and the single ended input channel of the SG-Link® in the field. It can be used with any SG-Link® that has its differential input channel outfitted as full bridge, ½ bridge with 350 ohm completion or ¼ bridge with 350 ohm completion.

### Software Installation

- The Tester Board is used in conjunction with Node Commander® software and requires no other software.

### Hardware Installation

- Determine the bridge configuration of the SG-Link® by reviewing its accompanying certificates and documentation; either Full, Half or Quarter.

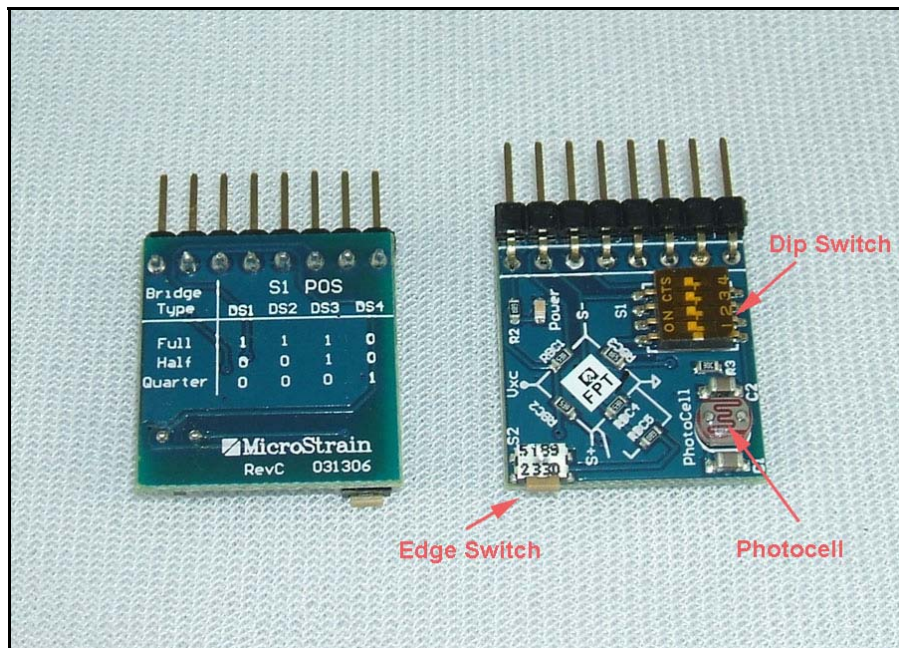
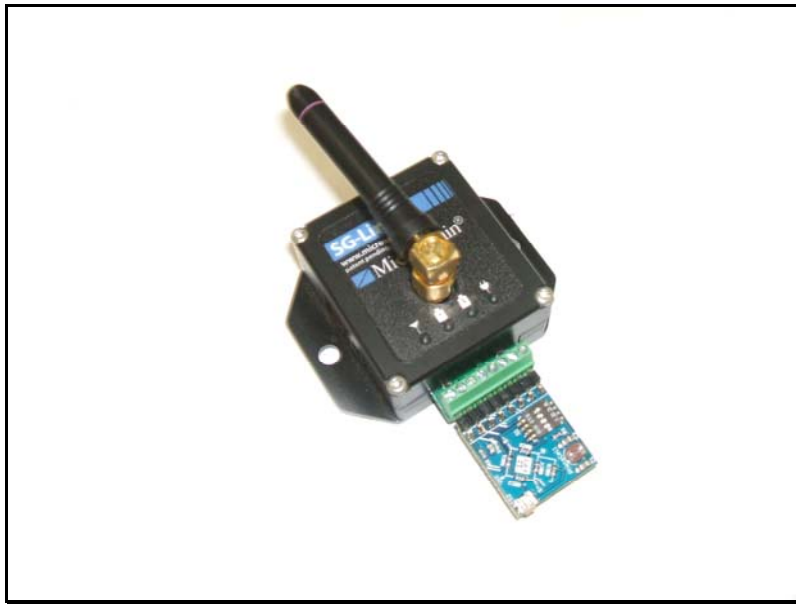


Figure 1

- Set the appropriate dip switch settings for the bridge configuration using the guide (bottom of the Tester Board). **For our example we will use a half bridge 350 ohm configuration.**
- Set switches 1, 2 and 4 to OFF and switch 3 to ON. As you view **Figure 1**, switches 1, 2 and 4 would be to the right and switch 3 would be to the left.
- Note: The dip switch may come with a brown protective film over its surface; simply peel the film off to access the white levers.
- Turn the SG-Link<sup>®</sup> power switch off and unplug the battery charger barrel connector to insure internal battery is not being charged.
- Loosen (by turning counterclockwise) the 8 terminal screws in the green Phoenix connector on the SG-Link<sup>®</sup>.
- Insert the 8 fingers of the Tester Board into the Phoenix connector as shown in **Figure 2**.
- Tighten snugly (but do not over-tighten) the 8 terminal screws.
- Turn the SG-Link<sup>®</sup> power switch on and observe that the small green LED on the surface of the Tester Board flashes once.

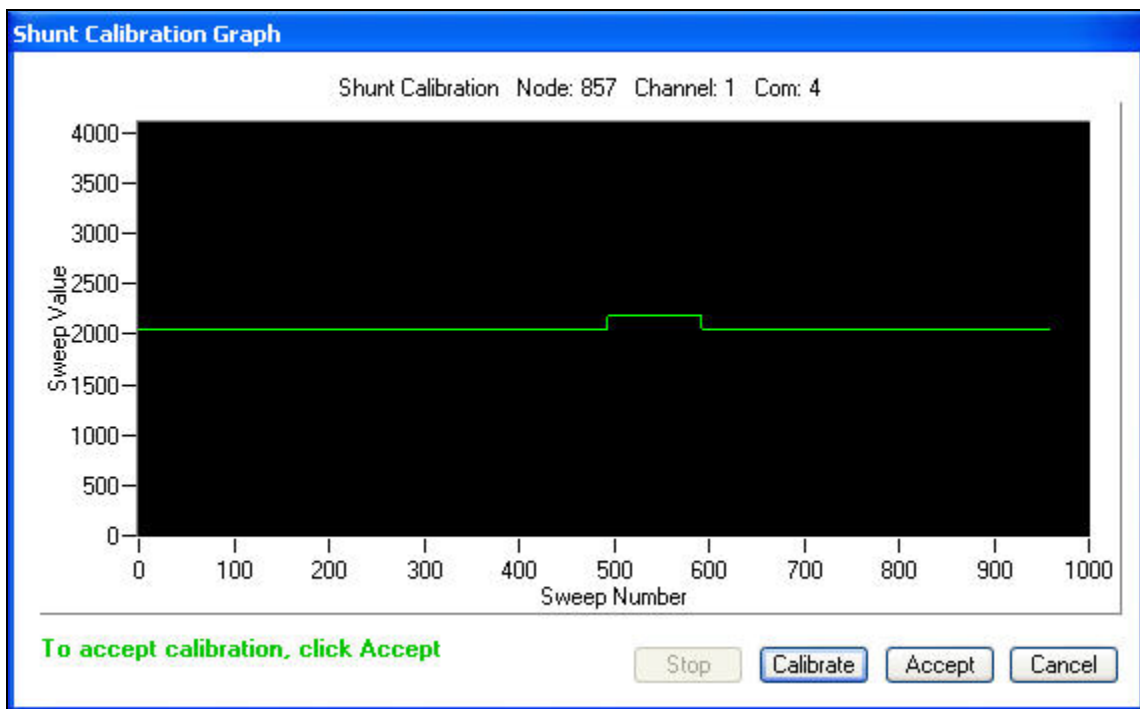


**Figure 2**

### **Software Operations**

- Launch Node Commander<sup>®</sup> software and establish communications with the SG-Link<sup>®</sup> as normal.
- Right-click the node and a drop-down menu will appear.
- Click Configure and the Configuration window will appear.
- Click the Channels tab.
- Enable channels 1 and 4 by checking the checkboxes.
- Click Apply.
- Click the Configure button for channel 1.
- The Configuration (Channel 1) window will appear.

- Set the Hardware Gain to 198.
- Set the Auto-Balance radio button to Midscale.
- Click the Auto-Balance button.
- An auto-balance will occur and a confirming message will appear.
- Click OK.
- Set the Conversion Coefficients Class to Strain and  $\mu$ Strain will automatically fill in as Units.
- Click the Strain Wizard button.
- The Strain Wizard window will appear
- Set the Bridge Type to Half Bridge.
- Click Next to move to the next view.
- Click Use Strain Measurement Wizard.
- Click Next to move to the next view.
- Enter the following values into the text boxes:
  - Number of Active Gauges = 1
  - Gauge Factor = 2.00
  - Gauge Resistance = 350 ohm
  - Shunt Resistance = 499000 ohm
- Click Calibrate and the view will change to the Shunt Calibration Graph.
- Click Calibrate and the SG-Link<sup>®</sup> will stream momentarily and automatically perform the shunt.
- The resultant graph will appear as exemplified in [Figure 3](#).



**Figure 3**

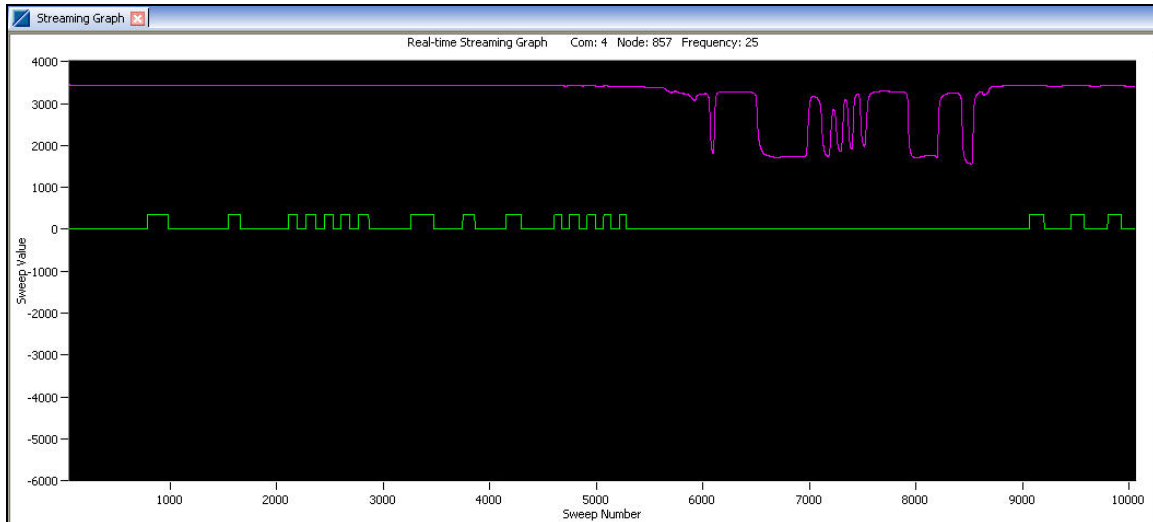
- Click Accept to move to the next view as exemplified in [Figure 4](#).



**Figure 4**

- Note that in our example we see a Gain of  $\sim 2.5 \mu\text{-strain/bit}$ ; we are normally expecting a range of 2.30 to 2.60  $\mu\text{-strain/bit}$ .
- Note that in our example we see a Residual Offset of  $\sim -5121 \mu\text{-strain}$ ; we are normally expecting a range of -4900 to -5200  $\mu\text{-strain}$ .
- Click Finish and the Strain Wizard window will disappear.
- Click OK and the Configuration (Channel 1) window will disappear.
- Click the Configure button for channel 4.
- The Configuration (Channel 4) window will appear.
- Set the Conversion Coefficients Class to A/D Value and Bits will automatically fill in as Units.
- Click OK and the Configuration (Channel 4) window will disappear.
- Click Apply.
- Click the Streaming tab.
- Uncheck Continuous Streaming.
- Enter a Sweeps value of 10000.
- Click Apply. Click OK and the Configuration window will disappear.
- Right-click the node and a drop-down menu will appear.
- Click Stream. Click Start and the node will stream for  $\sim 14$  seconds.
- During the streaming, push in and release several times, the button on the edge of the Tester Board to shunt the resistor in and out of the stream. This will appear as a stepped (green) line as shown in **Figure 5**.

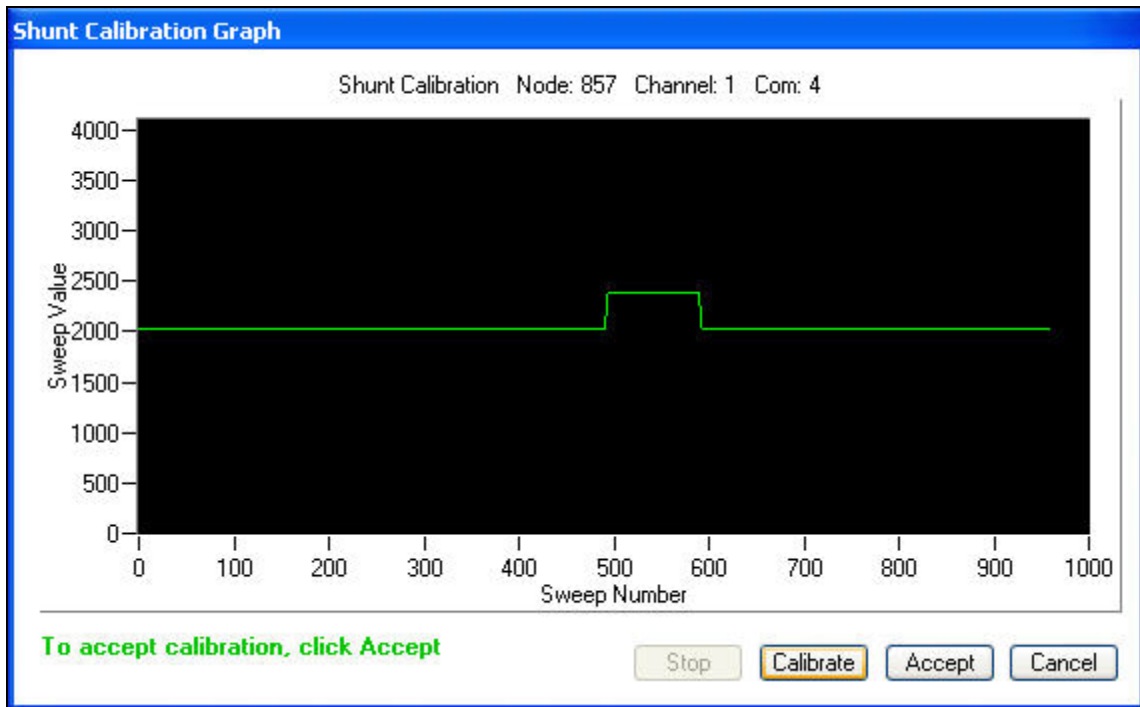
- During the streaming move your finger over, off and around the photocell to change the light passage. This will appear as a wavy (purple) line as shown in **Figure 5**.



**Figure 5**

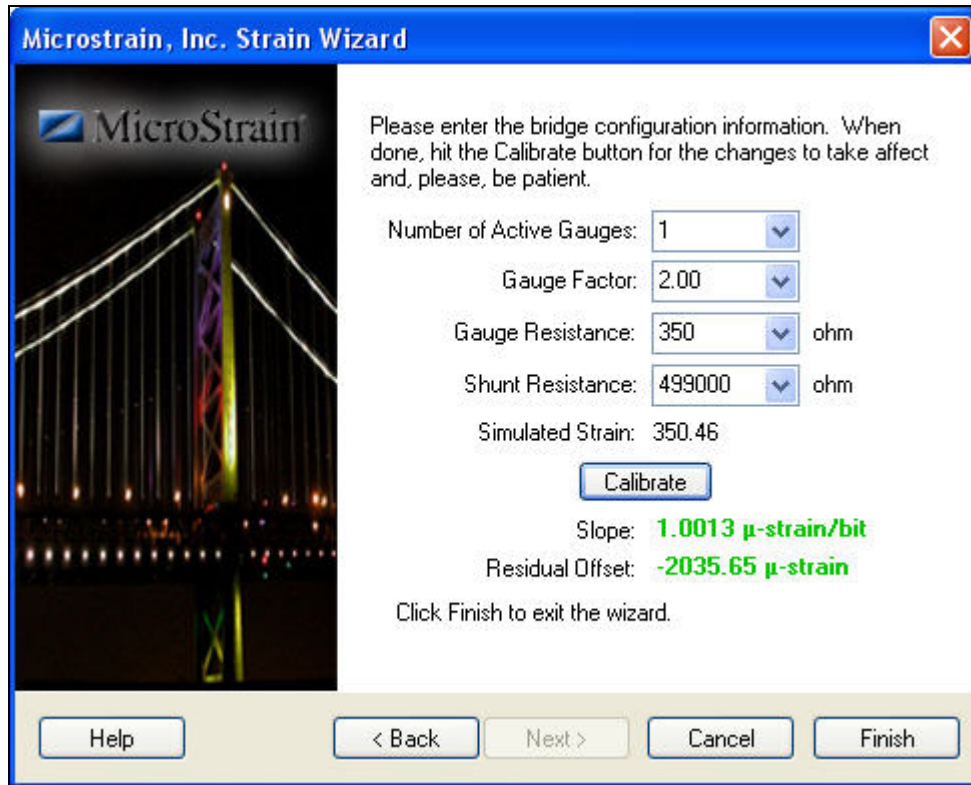
- **You have now demonstrated that channels 1 and 4 are working correctly!** Let's perform one more test on channel 1 only to insure we have an accurate read-out.
- Right-click the node and a drop-down menu will appear.
- Click Configure and the Configuration window will appear.
- Click the Channels tab.
- Uncheck channel 4 and leave only channel 1 checked.
- Click the Configure button for channel 1.
- The Configuration (Channel 1) window will appear.
- Set the Hardware Gain to 503.
- Set the Auto-Balance radio button to Midscale.
- Click the Auto-Balance button.
- An auto-balance will occur and a confirming message will appear.
- Click OK.
- Set the Conversion Coefficients Class to Strain and  $\mu$ Strain will automatically fill in as Units.
- Click the Strain Wizard button.
- The Strain Wizard window will appear
- Set the Bridge Type to Half Bridge.
- Click Next to move to the next view.
- Click Use Strain Measurement Wizard.
- Click Next to move to the next view.
- Enter the following values into the text boxes:
  - Number of Active Gauges = 1
  - Gauge Factor = 2.00
  - Gauge Resistance = 1000 ohm

- Shunt Resistance = 499000 ohm
- Click Calibrate and the view will change to the Shunt Calibration Graph.
- Click Calibrate and the SG-Link<sup>®</sup> will stream momentarily and automatically perform the shunt.
- The resultant graph will appear as exemplified in **Figure 6**.



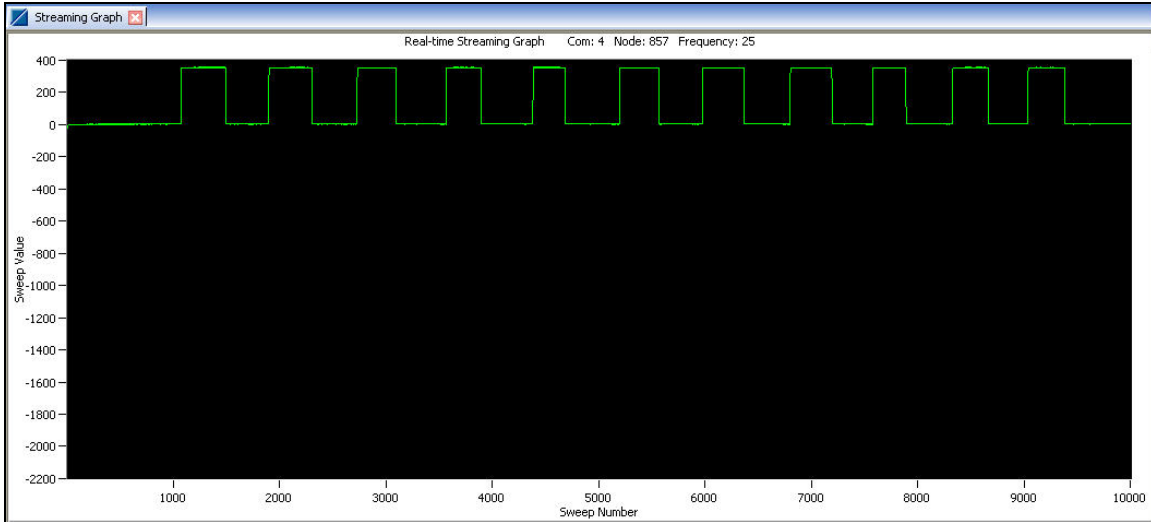
**Figure 6**

- Click Accept to move to the next view as exemplified in **Figure 7**.



**Figure 7**

- Note that in our example we see a Gain of  $\sim 1 \mu\text{-strain/bit}$ ; we are normally expecting a range of  $\sim 0.5$  to  $1.5 \mu\text{-strain/bit}$ .
- Note that in our example we see a Residual Offset of  $\sim -2035 \mu\text{-strain}$ ; we are normally expecting a range of  $-1900$  to  $-2100 \mu\text{-strain}$ .
- Click Finish and the Strain Wizard window will disappear.
- Click OK and the Configuration (Channel 1) window will disappear.
- Click Apply.
- Click the Streaming tab.
- Uncheck Continuous Streaming.
- Enter a Sweeps value of 10000.
- Click Apply. Click OK and the Configuration window will disappear.
- Right-click the node and a drop-down menu will appear.
- Click Stream. Click Start and the node will stream for  $\sim 14$  seconds.
- During the streaming, push in and release several times, the button on the edge of the Tester Board to shunt the resistor in and out of the stream. This will appear as a stepped (green) line as shown in Figure 8. Steps will be  $\sim 350 \mu\text{-strain}$ .



**Figure 8**

### **Congratulations!**

The SG-Link<sup>®</sup> is functioning properly and you are off and running! Please read the SG-Link<sup>®</sup> Users Manual to learn more about using your SG-Link<sup>®</sup> successfully. You will now want to connect your own sensors to the SG-Link<sup>®</sup>. Good practice at this point would be to reset the Hardware Gain to 104 and the Conversion Coefficients to A/D Bits. These are the default settings. This will remove the Tester Board's configuration and allow you to start fresh with your own sensors.

### **Further Support**

MicroStrain Support Engineers are always available by phone, email or SKYPE to support you in any way we can.