



Instruction Manual for Servo Current Monitor MicroSensor Document Version 1.2

Thank you for your purchase! This instruction manual will guide you through the installation and operation of your Servo Current MicroSensor (the Sensor). **Please read the entire manual carefully before proceeding.** If, after you read the manual, you have further questions or problems, see the Support page on <http://www.eagletreesystems.com> for additional information, or email us at support@eagletreesystems.com.

IMPORTANT: It is extremely unlikely that the installation of the Sensor will affect your model's radio range or control. But, as always after making an electronics change to your model, it is very important that you range and function test your model once the Sensor is installed to ensure that there is no impact on your system. Make sure that your "antenna down" operating range is within the manufacturer's specifications. See your Radio owner's manual for the correct procedure for your equipment. **DO NOT OPERATE IF YOUR MODEL DOESN'T PASS THE ANTENNA DOWN RANGE CHECK.**

Packing List

Your package should include the following: The Sensor with universal servo connectors, and a printed version of this manual. Please check our support web page for the electronic version of this manual which may be updated if changes were made after printing.

What the Sensor Does

The Sensor is a precision Ammeter, with 0.01A resolution. It is capable of recording up to +/-10A burst current, but no more than +/-5A continuous current. It connects to your MicroPower eLogger, Seagull, or Data Recorder product to provide current/amperage measurement of Servos, or other low amperage devices. Servo Current can be displayed and analyzed in 3 ways: 1) The live current and maximum current are displayed on the PowerPanel LCD or Seagull Dashboard Display. This is very useful for quickly seeing how much current your servo(s) are drawing without using a PC. 2) Servo Current is logged in the Recorder, for download to your PC. 3) Servo Current is displayed and graphed (charted) with the Eagle Tree Windows application, or a spreadsheet program.

Supported Products

The Sensor works with all versions of the MicroPower eLogger product, with all versions of our "Pro" and "Glide" systems, and with flash upgradeable firmware versions of our Seagull Flight, Car and Boat (and Recorder) products (units with firmware version "4.xx"). If you have a "3.xx" or lower recorder firmware version, a hardware upgrade is required. Please see our support web page for more information on hardware upgrades.

Steps to Follow

Installation and use of your Sensor should be quite easy and enjoyable if you follow these few steps:

1. Read through the manual to understand the warnings, determine the installation and setup sequence, etc.
2. Upgrade the Windows Application and Firmware for your Recorder as described in the "Windows Application and Firmware Update" section below.
3. Install and configure the Sensor as described below.

Windows Application and Firmware Update

To use the Sensor, you must update to **Eagle Tree Windows Application version 5.50** or higher. To update, download the latest application from the support page of our website, located at <http://eagletreesystems.com/Support/apps.htm>. After downloading and installing the Application, the firmware of your MicroPower eLogger or Recorder and Dashboard will need to be updated. **Version 4.91 or greater eLogger/Recorder firmware** is required for the Sensor to work correctly. **Version 4.50 or greater Seagull Dashboard firmware** is required if you are using the Sensor with the Wireless Dashboard. To upgrade your firmware, just choose "Tools, Firmware Control" and click the Update button.

Connecting the MicroSensor to the eLogger V3

The MicroSensor plugs into the "LCD/TX" port of your eLogger V3, as shown in Figure 1A. If you have a PowerPanel or other MicroSensors, those can "daisy chain" connect to the pins on the other side of your MicroSensor, with the polarity as indicated on the MicroSensor label.

Connecting the Sensor to the eLogger V1/V2

The Sensor plugs into the "Aux" or "LCD" port of your MicroPower eLogger V1/V2, as shown in Figure 1. If you have a PowerPanel or other MicroSensors, those can "daisy chain" connect to the pins on the other side of your Sensor, with the polarity as indicated on the Sensor label.

Connecting the Sensor to the Data Recorder

The 4 wire connector attached to the Sensor plugs into either the G-Force or EGT ("Thermo") port of your Data Recorder as shown in Figure 2. Make sure that you connect it in the correct location on the recorder, and with the correct polarity! **NOTE: The Servo Current Sensor is connected with the red wire on the left, which is backwards from the normal G-Force, EGT and transmitter connections.** Also, if you are already using both EGT and G-Force expanders, one of those can "daisy chain" to the Sensor as described in the MicroPower section above.

Configuring the Sensor with the Windows Application

If you have not already done so, set up the Recorder software as described in your instruction manual. Then, choose one or more of the Sensor options below:

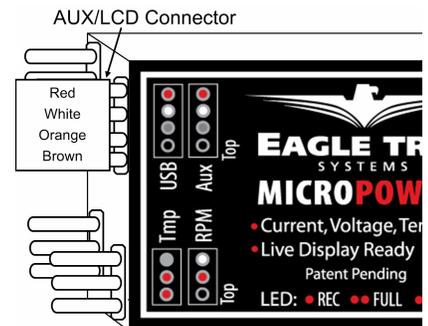


Figure 1

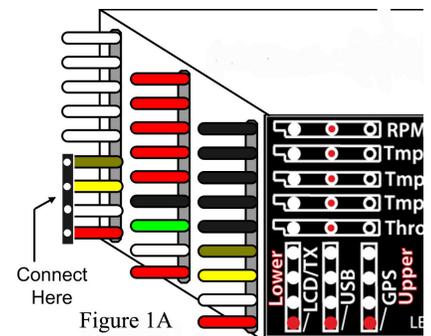


Figure 1A

Logging Servo Current

To log servo current, just click “Tools, Choose Parameters to Log in the Recorder” and check the “Servo Current” box.

Displaying Servo Current in the Windows Application

To display the Servo Current Gauge and/or Numeric Servo Current Display, click “Tools, Choose Instruments to Display on the PC Screen” and check the “Servo Current Ammeter,” and/or “Numeric Servo Current Amps” boxes.

Graphing Servo Current

To graph altitude, click “Graph Data/2D Chart,” select either the Left Y Axis or Right Y Axis, and select “Servo Current” for graphing.

Displaying Servo Current on the PowerPanel or Seagull Dashboard

Select “Tools, Configure PowerPanel Display” or “Tools, Choose Parameters to Display on Seagull Wireless Dashboard LCD” and choose “Servo Current” for display.

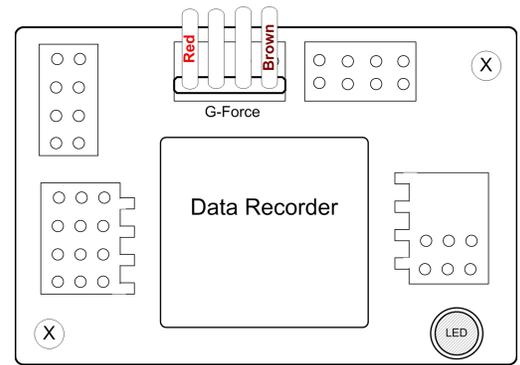


Figure 2

Installing the Sensor in your Model, with your Servos

IMPORTANT: The servo wires attached to the sensor are not designed to carry more than 5 amps continuous current (10 amps brief surge). Ensure that your setup will not draw more than this, and make sure to test the setup on the bench before flying to make sure the sensor wires do not overheat! To measure the current draw of a single servo, simply connect the Sensor as shown in Figure 3, using the attached universal servo connectors. To measure the current draw of all your servos and your receiver at the same time, simply connect the sensor between your BEC/RX Battery and your receiver (note the amperage limitation above!).

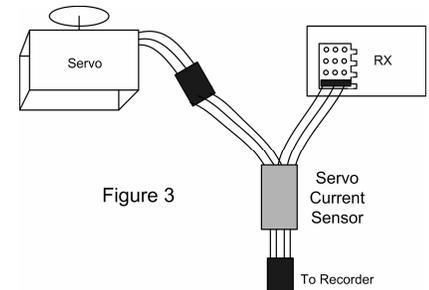


Figure 3

Troubleshooting

Below is a list of problems that may be encountered, and steps to remedy them. If your particular issue is not addressed by the below, see the Support page on <http://eagletreesystems.com> or email support@eagletreesystems.com. Include a full description of your problem, your machine configuration, brands/models of receivers, transmitters and servos, Windows Application and Recorder firmware version if possible, and any other relevant details.

Issue: Servo Current always reads zero on my display, and/or in my recordings

Solutions:

- Ensure that the Sensor is connected correctly to the MicroPower or Recorder
- Ensure that you have updated the recorder firmware to 4.91 or later.
- If you are downloading data and seeing zero current, ensure that you are logging Servo Current, under “Tools, Choose Parameters to Log in the Recorder”

Specifications

Range: approximately +/- 5A Continuous, up to 10A surge

Resolution: approximately 0.01A

Limited Warranty

Eagle Tree Systems, LLC, warrants the Sensor to be free from defects in materials and workmanship for a period of one (1) year from the date of original purchase. This warranty is nontransferable. If your unit requires warranty service during this period, we will replace or repair it at our option. Shipping cost to us is your responsibility. To obtain warranty service, email support@eagletreesystems.com for further instructions.

This limited warranty does not cover:

- The Software. See the Software license agreement for more information on Software restrictions.
- Problems that result from:
 - External causes such as accident, abuse, misuse, or problems with electrical power
 - Servicing not authorized by us
 - Usage that is not in accordance with product instructions
 - Failure to follow the product instructions

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE (OR JURISDICTION TO JURISDICTION). OUR RESPONSIBILITY FOR MALFUNCTIONS AND DEFECTS IN HARDWARE IS LIMITED TO REPAIR AND REPLACEMENT AS SET FORTH IN THIS WARRANTY STATEMENT. ALL EXPRESS AND IMPLIED WARRANTIES FOR THE PRODUCT, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTIES AND CONDITIONS OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN TIME TO THE TERM OF THE LIMITED WARRANTY PERIOD AS DESCRIBED ABOVE. NO WARRANTIES, WHETHER EXPRESS OR IMPLIED, WILL APPLY AFTER THE LIMITED WARRANTY PERIOD HAS EXPIRED. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THIS LIMITATION MAY NOT APPLY TO YOU.

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