EAGLE TREE
SYSTEMS

Instruction Manual for the Data Recorder Dual Axis G-Force Expander
Document Version 1.4

Model # GF-01

Thank you for your purchase!   This instruction manual will guide you through the installation and operation of your Dual Axis G-Force Expander. ***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.

Supported Products

The G-Force Expander is compatible with Eagle Tree Systems Flight Data Recorder V2, Car Data Recorders and Boat Data Recorders.   It is not compatible with our Flight Data Recorder V1.

Packing List

Your package should include the following: G-Force Expander, and a printed version of this manual.   Please check your packaging for printed addenda to this manual which may be included if changes were made after printing.

How the G-Force Expander Works

The G-Force Expander works with your Data Recorder to measure acceleration on two axes.   It measures both positive and negative G's, up to +/- 38 G's on each axis. The Expander measures G-Force by means of an integrated circuit.

Connecting the G-Force Expander to the Recorder

The expander plugs into your Data Recorder as shown in Figure 1.   Make sure that you connect it in the correct location on the recorder, and with the correct polarity!   Connect the G-Force Expander to your Recorder.   CONNECT THE G-FORCE EXPANDER BEFORE POWERING THE UNIT!

Configuring the Expander with the Recorder and the Application

If you have not already done so, install your Data Recorder in your model and set up the Recorder software as described in your instruction manual.

Connect the G-Force Expander to the Recorder **(do not install the G-Force Expander in your model yet!)**, and connect the Recorder to your PC as described in the Recorder manual, and under Tools->Choose What to Log, choose G-Force.   After you select G-Force, you will be prompted to calibrate the Expander, as described below.
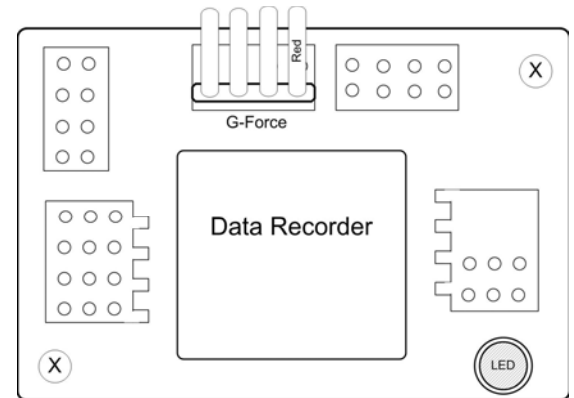

Figure 1

Calibrating the G-Force Expander

Calibration of the Expander is relatively simple. It is usually easier to calibrate the Expander before mounting it in your vehicle.   The Calibration Wizard runs when you first choose to log G-Force.   You can later run the Wizard from Tools->Calibrate G-Force.   Gravity is a constant (at least where we live) and is used to calibrate the device on both axes.   To calibrate, just follow the steps in the Wizard.

Calibration hints:

- MAKE SURE YOU CONNECT THE G-FORCE EXPANDER TO THE RECORDER BEFORE POWERING UP.
- Do not squeeze the large black integrated circuit during calibration, as this can affect the readings.   Hold the G-Force expander by the flat part of the circuit board instead.
- Calibrate on a flat, level surface such as a table
- For vertical measurements, use a right angle object placed against the flat side of the sensor, such as a wooden block or an "L" bracket.
- Make sure that it is easy for you to click "Next" with your mouse or keyboard during calibration without vibrating or moving the sensor.

Configuring the Application to Display G-Force Parameters

To display the new parameters, under Tools->Choose What to Display, choose numeric and/or instrument display of G-Force Instrument and/or Numeric displays. Also, G-Force data is available for graphing within the application.

Seeing G-Force in Live Mode

G-Force parameters are displayed by the app in Live Mode.   Note that as you tilt the G-Force Expander so that the axes are pointing either down or up, you will see the G-Force levels move between +1 and -1 G's due to gravity's pull.

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Installing the G-Force Sensor in your Model

The Expander can be easily mounted with double sided servo tape, or similar.   The Expander measures acceleration in two axes.   Install the Expander so that the X and Y arrows point in the directions you want to measure.   For example, if you want to measure front to back and vertical acceleration, mount the board vertically so that the X arrows are pointing up and down, and the Y arrows are pointing forward to backward.   Ideally, install the Sensor so it is as close to the center of gravity in your model as possible.

Playing Back Data after a Run

After your race, download data to your PC as described in the Recorder Manual.   If you have selected to log and display G-Force, these instruments and/or numerical readouts should appear in the application.

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 info@eagletreesystems.com.   Include a full description of your problem, your machine configuration, brands/models of receivers, transmitters and servos, application and Recorder firmware version if possible (from Help->About in the app) and any other relevant details.

Issue: The G-Force readings in Live Mode do not read exactly 1 G when the axis read is pointing straight up.
Solution:
- Re-run the calibration – the Expander may not have been held completely still during the calibration process.

Issue: I do not see G-Force logged in the Recorder.
Solution:
- Make sure that you have selected logging of G-Force in the "Choose What to Log" dialog box under the Tools menu.
- Ensure that you have selected G-Force in the "Choose What to Display" dialog box under the Tools menu.
- Doublecheck your connections to ensure that the Recorder is connected correctly to the G-Force Expander, and the battery.
- Ensure that you are operating within the ranges listed in the Specifications section below.

G-Force Expander Specifications

Axes: Dual
Max G-Force: +/- 38 G's
Weight: approximately 0.2 ounces

Limited Warranty

Eagle Tree Systems, LLC, warrants the G-Force Expander 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, contact us by phone, fax or email to request an RMA number.   No returns will be accepted without this number.

This limited warranty does not cover:

- The Software included with the Data Recorder.   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 MALFUNCITONS 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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