

Inspire's V3.4 firmware offers some exciting new features. They are summarized below:

- Support for magnetic compass heading and barometric altimeter data. A Garmin Etrex Summit handheld GPS (or suitable equivalent) is required for this feature. Ideal for stationary (or slow moving) applications such as pole mounted cameras.
- Support for the ETEK EB-85A GPS module. This GPS uses very fast 5Hz updates (versus the standard micro-GPS's 1Hz rate).
- Upon timed event or R/C trigger, the GPS record data is now sent to the external RS-232 data channel for use in realtime telemetry applications.
- Upon R/C command, a special marker can be placed on the stored GPS data record. This can be used to identify important geographical locations during record review.
- The current sensor now offers battery fuel gauging data. The mAh consumption is measured in realtime, which allows for easy estimation of the propulsion battery's remaining charge.

INSTRUCTIONS

1. **New Feature: Magnetic Heading and Barometric Altitude**

Static or very slow moving GPS applications do not provide accurate heading or altitude data. That is because GPS systems require regular motion to decode the satellite signals. A solution is to substitute the GPS NMEA sentence data with magnetic compass heading and barometric altitude data. Fortunately, Garmin's Etrex Summit GPS has these features built into it. Inspire now offers full integration with this clever handheld GPS system.

To use the Etrex Summit you will need to connect it to Inspire's external 4-pin RS-232 connector. You may build your own Garmin compatible cable using the information in the main installation manual or you can purchase part number CAB-GEK-M from www.dpcav.com. Be sure to remove the micro-GPS module (if installed) before installing the handheld GPS.

You must configure Inspire to use the Etrex Summit's special compass and altimeter data. These data sources are automatically used when the GPS Module ID is set to "ETREX." Please see Figure 2.

Note: You can force the Etrex Summit to use satellite derived GPS heading and altitude data by choosing the "Generic" GPS MODULE ID with the baud rate set to 4800.

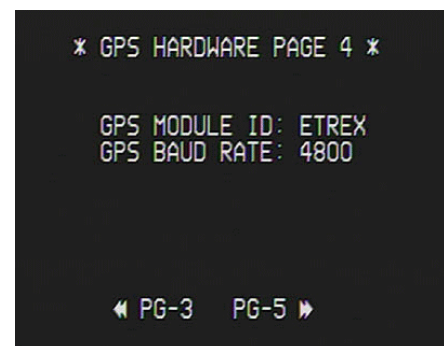


Figure 2

The Etrex Summit must also be properly configured. Navigate the Summit's LCD menus and choose the "Setup" page. Then select "Interface." Set the I/O format to NMEA, 4800 baud.

When the Etrex's magnetic compass data is used, Inspire's heading field will be labeled degM. When GPS derived heading data is used it will be labeled degT.

2. **New Feature: Etek EB85A 5-Hz GPS**

The Etek EB-85A is a tiny GPS module that provides 5-Hz GPS data rates. It is sold by specialty suppliers, including www.dpcav.com. This GPS module is similar to the standard micro-GPS, except that the EB-85A refreshes the navigation data much more often.

To use the EB-85A you will need to adapt its 8-pin cable to match Inspire's 6-pin micro-GPS header connector. Although it is possible to custom build a cable, a compatible cable is available from www.dpcav.com.

The EB-85A requires special communication methods to activate its high-speed data features. Fortunately, Inspire handles this for you. All that is needed is for you to set the GPS MODULE ID to "EB-85A." Please see Figure 3.



3. **New Feature: GPS Record Telemetry data**

Figure 3

Inspire's recorded GPS data is typically reviewed after each use by using the system's menu-based RS232 serial or on-screen viewing features. With the V3.4 release, we have expanded the RS232 method so that each GPS record is sent to the external RS-232 serial port as it is being stored to memory. The data is in the same format as used with the SEND GPS RECORD feature.

One exciting application involves using RF-based data modems to send the GPS records during a timed or R/C activated event. That is to say, as each record is stored, it is also transmitted to a remote location by your custom radio data link. We do not offer RF data modems, but interesting products are offered by maxstream.net, aerocomm.com, and other firms. We are unable to answer questions concerning their products. Please consult with these vendors to determine what is best to use in your application.

The serial baud rate is set by the "REPORT BAUD" entry found on the GPS FORMAT PAGE 3 menu. The 2400 baud setting is used to disable the telemetry data feature. All other baud rate settings are valid.

4. New Feature: R/C Controlled GPS Record Marker

At each timed or remote trigger event, the GPS data is saved to Inspire's memory. Some records may have special significance, such as the location of a point of interest. It is now possible to flag such records with a special marker. This marker will appear in the stored record when it is reviewed (either on-screen or via RS232).

The special marker feature shares the Video On-Off R/C control input. This R/C channel now has three states that are controlled by the servo signal's pulse width. The servo signal pulse times are as follows:

- Video Off, Marker Off: < 1.40mS
- Video On, Marker Off: > 1.60mS
- Video On, Marker On: > 1.85mS

When the marker is enabled, the main screen's record counter will include a special flag character (it will replace the colon that is normally seen). Please see Figure 4; the flag area is highlighted by a red arrow.

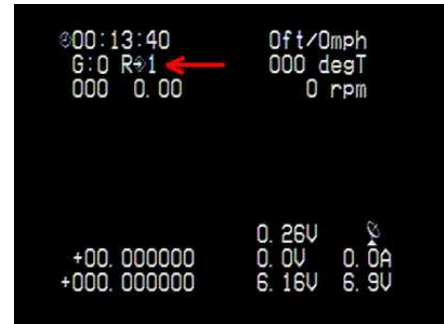


Figure 4

Whenever the flag is present, the marker will be stored with the data record. Later, when the records are reviewed on-screen, those that have been marked will include the special flag character.

Although you can use any spare channel on your R/C transmitter to control this feature, it will be important to choose one that will provide the three different pulse times. We recommend a servo channel that can be controlled by a 3-position switch. If that is not possible then an ordinary knob or stick controlled channel can be used.

As with the prior firmware release, when the "Send GPS Report" feature is used, the data records are sent out the RS-232 port. However, the marker feature has changed the data dictionary. That is to say, there is a new single character field at the end of the record string. It will show "S" if the marker is on (Set) and "C" if it is off (Clear).

For example:

```
$DAT,001,Good,18:43:33,-120.140600,+32.686000,00000ft AGL,000mph,029.0,S<CR><LF>
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5. New Feature: Battery Fuel Gauging (mAh consumption)

The current sensor is now capable of displaying mAh current consumption. It can be used to determine remaining battery capacity, which makes it a very effective Battery Fuel Gauge.

The main screen can be setup to show Amps or mAh. To choose the data you need, use CURRENT TYPE setting found on Page 5 of the Feature Setup menu. This entry can be set to Amps or mAh. Please see Figure 5.

The mAh value is retained until Inspire is turned off. For best accuracy, the average measured current should be one Amp or higher.

Note: The maximum allowed value is 32.7Ah (32,700mAh). Higher values will display "LIMIT."

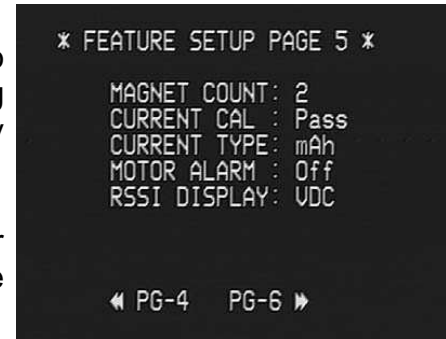


Figure 5