The GPS II package includes the GPS sensor, connecting lead, foam mounting pad and instructions as well as the 'Y' lead required for set-up

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PowerBox GPS II

We take a look at the more advanced GPS Sensor from PowerBox, the GPS II

RCJI readers that recall the PowerBox iGyro review published back at the end of 2012 will remember the original PowerBox GPS Sensor, which had been developed to supply information to the iGyro so that the sophisticated variable gyro gain to speed function could operate effectively. As an ancillary function it was also possible to read the maximum speed that the model reached during a flight via the iGyro display after landing.

The new GPS II from PowerBox is a much more advanced product, which is also able to function as a standalone unit providing speed, distance, position, height and vario telemetry data via a compatible radio link. In addition it incorporates a newly developed radial helical aerial, which provides superb GPS reception in any flight attitude, thus enabling very accurate speed measurement, even during sudden changes in speed or direction of flight.

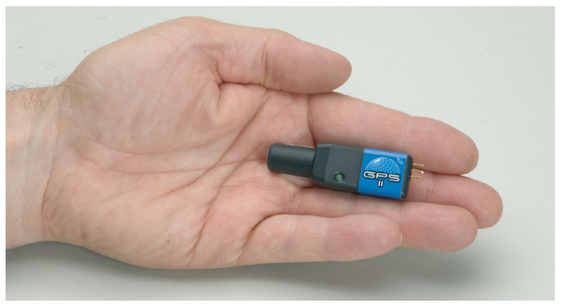
It has long been accepted that a GPS system is unable to measure speed accurately unless the model is in level flight, but the GPS II incorporates the very latest generation GPS receiver which calculates speed exploiting the Doppler effect instead of the previously used system of comparing the current position with the original one.

Although even the latest GPS systems are only accurate to slightly less than 10 metres of an exact position, this does not cause any problems when being used in models such as ours, where positional accuracy greater than this is not normally required. The speed range is very wide, with a maximum horizontal speed of up to 1,200 km/h, and vertical speed of 360 km/h. The unit does also include a supplementary pre-amplifier to improve the signal quality in challenging conditions. Of course the GPS II can also be used with the iGyro if required.

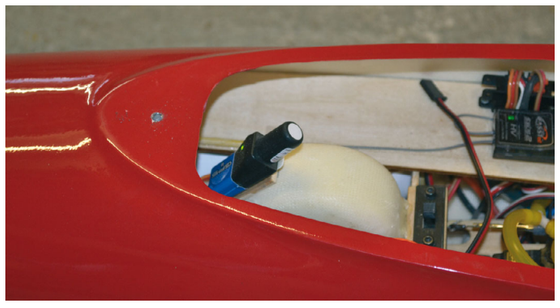
What's Inside

The GPS II is supplied in the characteristic PowerBox style cardboard carton, and comprises of the unit itself, this measuring a very compact 58 x 18 x 17 mm in size and weighing only 14 grams including the supplied connecting lead, a 'Y' lead (required for programming), servo tape pad and English and German language instruction manual.

Two versions are available, only varying in the pre-loaded programming, a standard version which is pre-set for use with the iGyro and Multiplex M-Link telemetry system and a version pre-programmed for Futaba FASSTest radios. The unit under test is the Futaba version, however as the software is common across the two versions, either type can be changed by the user to suit another of the compatible radio systems, currently these are Futaba FASSTest, Graupner HoTT, Jeti EX and Multiplex M-Link, with plans for JR DMSS to be added in the near future.



As can be seen, the sensor is particularly compact, notable is the green LED, which indicates if the sensor is hunting for satellites or is in full operation



The sensor was installed in my JSM Xcalibur for testing, fitted to the nosewheel inner moulding as shown, the illuminated LED indicating the unit is operational

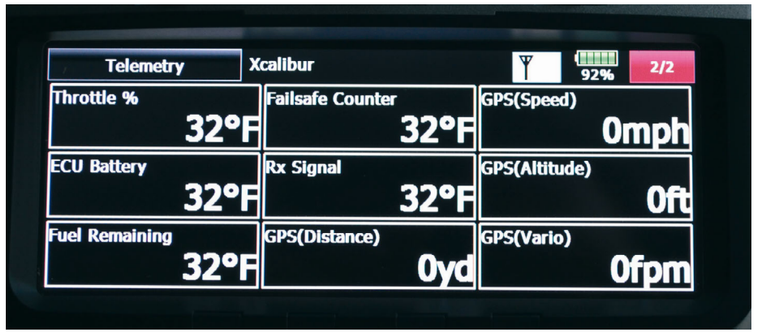
If the unit does need to be re-programmed to suit a particular radio system it is necessary to use a PC/Tablet complete with suitable USB interface – PowerBox supply such an interface, but other types will also work, so far Multiplex and Jeti USB interfaces have been used successfully. The special Terminal program has to be downloaded from the PowerBox website first, then the unit is connected to the computer via the supplied 'Y' lead, with a 4.8 to 8.4 V battery being plugged into the spare connector of the 'Y' lead.

With the Terminal program opened it is then possible to elect the radio system being used, then dependant on this a greater or lesser number of set-up options are shown. For the review I was using my Futaba 18MZ, and in this case there are no options shown, as the telemetry system within the transmitter incorporates all alarms, limits etc, however other radio systems allow more values and alarms to be set-up within the GPS II. As and when software updates are available, the Terminal program is also used to install these into the GPS II.

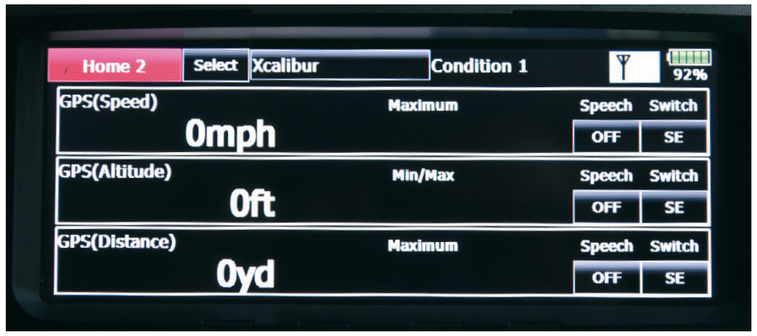
As the unit I had was already programmed for Futaba all I had to do was register the GPS II in the transmitter and name the data fields on the telemetry screen, then decide which data should be included in the Home2 screen of the transmitter as the ones selected for this screen enable the audio output and add the ability to program alarms/warnings.

For testing I set-up Speed, Altitude and Distance, with both audio and vibratory alarms activated, for example the speed warning was set at 180 mph, as I know that the test airframe is capable of around 170 mph in level flight. Although not programmed at the time of writing, I intend to also set an alarm at just above the stall speed in landing configuration with undercarriage and flaps/crow deployed, as this will assist in landing the model as slowly as is safe if there is no wind, a very useful attribute if flying from short runways in these conditions.

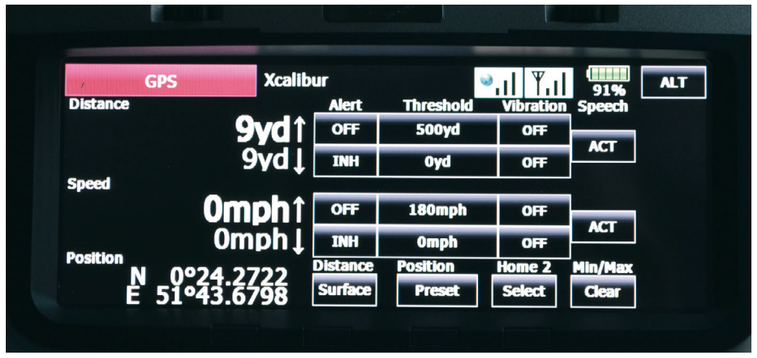
Of course as the speed measured is over the ground and not through the air, in windier conditions the alarm will be inaccurate, as the model may well be moving over the ground much slower than the stall speed if flying into wind, and vice/versa downwind.



The main telemetry screen on my 18MZ has the GPS data on four fields, with each of these having been named appropriately



The Home2 Screen is where the three available audio outputs are selected



This screen allows the thresholds for alerts to be set, as well as deciding if audible and/or vibration warnings are to be used

Operation was flawless as expected with the Home screen showing the data clearly to my spotter, whilst the audio output was interesting and informative to listen to during the flights. After a couple of flights the speed data was set as the only audio output from the GPS II, as this was the most relevant to the model and flying site, and the horizontal maximum flight speed recorded was almost identical to that previously recorded with this airframe when using a pitot tube telemetry speed sensor, confirming the overall accuracy.

Notable also is the update response for the out this short time should not cause any flight delays! Whilst the unit is searching for the satellites the integral LED flashes, once the satellites have been acquired the LED illuminates continuously.

Operation

The GPS II unit was fitted to my JSM Xcalibur test airframe using the double-sided tape supplied onto a small ply plate glued to the nose retract inner moulding, as this keeps it well clear of any metal or carbon fibre materials, both of which can have a shielding effect.

After switching the model on it does take between 30 and 60 seconds for the GPS II to locate the satellites it needs to function, but as it generally takes much longer than this to start a turbine and get the model ready to taxi speed function, this being almost instantaneous, unlike many of the earlier generation of GPS sensors from competitors in the field, thus giving much more accurate speed data at all times.

The GPS II is another very useful and interesting piece of modelling electronics from one of the most innovative model companies around, it is of very high quality, small and light, easy to install and program, and supplies really important real-time data to the pilot, making flying our jets even more fun, whilst at the same time contributing to safe operation of our valuable models.

Contacts
www.powerbox-systems.com