First heard of the development of this new three-axis gyro system early in 2012, and keenly awaited its release, as I have been using PowerBox products for many years now with great success, and expected the new iGyro to be just as effective as the other products I have used.

The iGyro is purpose designed for use in fixed wing aircraft, and offers independently adjustable gyro stabilisation on roll, pitch and yaw axis, to both make the model much steadier in bumpy conditions and to make the overall flight path smoother and more realistic.

The iGyro is a neat and compact unit in an anodised aluminium case, and is fitted with a nice clear OLED display. It has inputs for most modern radio systems, including Futaba S-Bus, Spektrum, Multiplex M-Link, Jeti and Graupner HoTT, and single or twin receivers can be used as required, the use of twin receivers offering increased safety.

Remaining inputs are for the optional GPS sensor and a Bus 2 socket, whilst outputs total five, two aileron, two elevator and one rudder, there being one final connection for the SensorSwitch used during programming, this can then be disconnected as it is not required once set-up is completed.

Further components included are four double-ended input leads, two for input and two for output, a USB interface adapter for software updates as well as servo tape to securely mount the iGyro. The optional GPS sensor is contained within a neatly moulded case, and has a single lead to connect to the...
iGyro, the sensor again being secured in the model with servo tape. The supplied instruction manual is in both English and German and as per usual with PowerBox manuals is both clear and informative.

**ON TEST**

To test out the iGyro I decided to install it into my FeiBao F9F Panther, as although this model flies superbly and is super smooth in most flight regimes, the one weakness it suffers from is its vulnerability to crosswinds when landing. If there is any significant crosswind the Panther can be a real handful during the approach, with aileron and rudder controls being used constantly to keep the wings level all the way to touchdown, this possibly being due to the amount of dihedral and the large tip tanks.

I had previously fitted a single axis gyro for the ailerons and this had helped, but was still not a complete cure, so having a three axis gyro with the features of the iGyro would hopefully eliminate this less than welcome flying characteristic.

Usefully the iGyro is quite flexible with regard to how it is installed as it can function as a standalone unit or in conjunction with a PowerBox power supply system, and this can be either a conventional unit such as the PowerBox Competition or an SRS unit such as the PowerBox Cockpit SRS.

Installation of the unit into the Panther was very straightforward, as the unit is nice and compact, as is the GPS module, and there is plenty of room in the large fuselage of the model. As I use Futaba radio an R7008SB (S-Bus) receiver was installed alongside a PowerBox Cockpit SRS system, these components all being compatible, and enabling very simple inter-connection as they all use serial bus communication. A single lead is used from the receiver to the iGyro, whilst two leads run from the iGyro to the Cockpit, offering a degree of redundancy, as only one lead is actually required for full operation.

Note that if the iGyro is being used on a standalone basis or with a conventional PowerBox power supply system that up to five leads would be required, for ailerons, elevator and...
rudder, but using the Cockpit SRS enables serial bus communication and the use of only two leads. The GPS unit was installed alongside the iGyro, and a single lead connects the two, whilst the SensorSwitch was only plugged in during set-up.

Initial set-up was carried out following the comprehensive instructions, initialising selecting the radio system being used and then going on to set the output to digital output for operation with the Cockpit SRS. This mode means that servos cannot be connected directly to the outputs from the iGyro, as the output is in a serial digital format that the SRS system utilises.

The exact positioning and orientation of the iGyro itself is not critical, apart from the requirement that it be mounted at 90 degrees to the models centreline, then the software within the iGyro is used to confirm the orientation of the iGyro within the model, this being quite straightforward.

Selecting the wing type comes next as there is a Delta option in the software, if selected this removes the need to have delta mixing in the transmitter – in fact any delta mixing in the transmitter must be switched off or the heading mode of the iGyro will not function correctly.

The next section is the channel assignment, this allows the five output channels (2 x aileron, 2 x elevator and 1 x rudder) to be assigned to the required radio channels, then the normal and heading gain set-up channels can be assigned to specific controls on the transmitter, after which the channel to be used for flight modes is selected.

The direction of gyro on each axis is now set, this is a critical step as having the gyro operate in the reverse direction to that required would cause a fright at best and a lost model at worst, so the settings here should be double checked for safety.

The airspeed settings menu enables the effect of the GPS system to be adjusted, this system has been developed so that the gyro gain is automatically changed as the airspeed of the model varies so that the gyro gain is higher when the model is flying at lower airspeeds and the control surfaces need more deflection to be effective, the gain then reducing as the airspeed increases, to avoid any oscillation of the model at increased airspeed due to the gain being too high.

Before I started the in-flight adjustment and setting of the iGyro I carried out a test flight of the Panther with the gyro functions disabled to ensure all trims were correctly set, as this is required to allow the gyro to operate at its optimum, and not to have to fight an out of trim model.

With this complete the iGyro was programmed as per the instructions with a three position switch being used to select the required flight mode, FM 1 being gyro disabled, FM 2 gyro enabled with rudder operating in normal mode only and FM 3 having the rudder gyro functioning both on normal and heading mode.

The first set-up flight was made with only the aileron gyro able to function, with the right and left hand sliders on the transmitter being set to adjust normal and heading mode gain respectively.

Take-off was made with the flight mode switch set to position 1, so that the gyro was inoperative, once at a safe height and at a steady and fairly slow cruise speed the switch was moved to position 2 and the right slider carefully moved to increase the gain of the gyro until I started to see the wings rock from side to side, signifying that the gain was now too high, at which point I reduced the gain slightly until the wings remained level.

This completed setting the normal mode for aileron, but to check the effect of the GPS setting on the gain relating to airspeed I then carried out a couple of full power level passes, watching to see if the wings oscillated at this higher airspeed, which would have required adjustment when back on the ground to the change in sensitivity of the GPS speed compensation. Luckily the model stayed completely stable during these runs, confirming that the GPS setting recommended in the manual was correct.
I then repeated the low and high speed runs, this time using them to set the heading mode in a similar manner to that done with the normal mode. Once this was also completed the model already felt even more stable, and I left the gyro enabled during approach and landing, the iGyro holding the wings nice and level throughout.

The next flight was used to set-up the elevator gyro gain in exactly the same manner as had been done for the aileron gyro gain, again landing with the gyro switched on. The third and final flight was to set-up the rudder gain, however this time the process was slightly different as the preferred method is to have the rudder heading mode disabled in normal flight as this eliminates any tendency for the gyro to try to hold the tail straight during turns and normal manoeuvres, the heading mode only being operative in flight mode 3, primarily for point and slow rolls or knife-edge flight.

Once the rudder gain setting had been finalised I was able to fly the model with the iGyro fully active, and in this mode normal flight became even smoother than before, which is quite impressive as the Panther even without a gyro is in normal flight extremely smooth.

Aerobatic manoeuvres really surprised me as I could certainly did see a significant improvement with the gyro operating – the Panther has quite a lot of dihedral for a jet, and this does affect the rolling performance, with the roll rate suddenly speeding up as the model rolls through inverted, the time to roll from upright to inverted being longer than the time to roll from inverted to upright.

As well as this, rolls with the Panther are less than perfectly axial, tending to be slightly barrelly, however the iGyro made a remarkable improvement to this, normal rolls becoming almost completely axial, with the roll rate being totally consistent, making the flight appear much more realistic. Particularly impressive are four point and slow rolls, the iGyro making these far easier to perform well, and again, much more impressive and realistic.

Once back on the ground and with all three gyro axis set the slider channels can be re-programmed to be used on other functions, these two channels are only required for the iGyro during the set-up procedure. Interestingly if the GPS sensor is used it is possible at the end of a flight to read off the maximum speed of the model over the ground, in the case of the Panther this maximum being no less than 245 kmh, or just over 152 mph!

With the iGyro installed and programmed the Panther now has really excellent flying characteristics throughout its speed range, and landings are much easier and more realistic, as is general flight, the use of the iGyro giving this mid sized model the stability in flight of a far larger airframe.

CONCLUSION

Once again PowerBox have come up with a superb and highly effective product. It was noticeable during the recent JetPower show that a number of models had the iGyro fitted, and I am sure that more and more jets will have these great units installed in the near future, particularly by those wanting to make their scale models fly in as realistic a manner as possible. I have been so impressed that I have already obtained a second system for another of my jets! RCMW