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Precision Aero Products

Precision Black Box “Turn Key” Flight Coach V4

Installation & Use Notes

Thank you for choosing to purchase a Precision Aero Products “Precision Black Box”. This product is proudly designed and partly manufactured/ assembled in Australia by Precision Aero Products. The aim of the product is to make the configuration and installation process as easy as possible for you.

The unit is comprised of the following items:

- Precision Black Box Control/GPS/Compass assembled into a 3D printed orange enclosure.
- Universal Mount for F3A Biplanes or Monoplanes.
- Sandisk 32Gb Micro SD Card (fitted to controller).

Additional items required:

- PC or Mac computer. **Google Chrome is the recommended web browser.**
- Micro SD Card Reader. Note, some laptops have a Micro SD card socket already.
- 2S LiPo RX(800 mAh or less) pack battery to power system. We don’t recommend powering the Black Box from your receiver. It’s best to keep both systems totally separate.
- Plotter at flightcoach.org

1. The system is designed to sit on a flat, level surface in your fuselage. It can be secured in place with velcro or double sided tape etc. **It's important that the black arrow on top of the unit points to the nose of the model. The unit label should be facing up. Avoid locating the unit on the main flight batteries or solid carbon plates as this may cause shielding that could affect the displayed plotter results.** A universal mount is now included. It suits both biplanes and monoplanes. Below are some pictures showing the fitment to a CK Aero Pioneer wing tube socket with double sided tape. For a biplane you only need to use the flat plate. Attach the flat plate to the top wing of your bipe with velcro or double sided tape. The Black Box is slid sideways into the mount. This makes removing the micro SD card much easier.

2. The system is powered from a 2S RX LiPo pack via a JR type lead. A pack with a capacity of 800 mAh or less is suitable. The RX pack should be safely secured within your model if not using the included mounting kit.
   When the system is powered up, LED lights on the controller will flash. You can normally see these LED's through the case. A red LED will be illuminated on the underside of the GPS/Compass indicating power is on. Again, you may be able to see this through the case. On the SD card side of the GPS/Compass is a green LED which will flash once the system locks onto GPS satellites. The system is now logging to the SD card in the controller.

   As the LED's are not so easy to see, we suggest powering the Black Box one minute before you intend to fly. This should ensure it is locked onto satellites.

3. The system comes pre-loaded with the latest firmware and configuration parameters. The accelerometer and compass have already been calibrated for you. Recalibration is of course possible if needed. You will probably need to do a pre-flight calibration at your flying site. When using the Flight Coach system for the first time at a new flying site, it is important to gather GPS information for where you stand (the Pilot Position) and also where the 'box' or flight line is.
   Details of initialising hardware. Placing model at the pilot position to determine this point. Or manually entering initial GPS position. Storing this as the default
   From the Flight Coach FAQ:
   - How to initialise system so it has the correct Origin:
   - The Origin is captured when GPS has locked in and several other conditions are met, like model velocities are very small, etc. This is needed to have the Origin as accurate as possible. To facilitate it, the model shall be stationary and less than 50m from your pilot position, and (roughly) levelled and then the controller shall be powered. It will go through initialisation sequence including arming itself and will wait for the GPS to lock in. First time on the day it may take longer, otherwise it should be 2-5 s. On some hardware the blue LED goes green and another blue LED in GPS starts blinking. It means that the Origin has been defined, time to go flying. Confirm indications on your HW. Otherwise, when you carry the model or you are already flying, the Origin may not be set at all or set in some remote position.
   - BTW, all displayed GPS position (Origin, Pilot, Centre) are links that will take you to Google Maps, just click them.
   - Origin can be manually adjusted when the FC is run with moveOrigin parameter set to true using the link https://flightcoach.org/ribbon/plotter.html?moveOrigin=true . The three additional controls on the right allow moving the Origin sideways and up and down.

4. After a flight, power down the system and carefully remove the Black Box from the model and remove the micro SD card from the bottom of the unit. The SD card just pulls out. The SD card has a small ridge on the outer edge. You can use your thumbnail on the ridge to remove the SD card. You could also add some tape to the SD card as a tab to help removal. Plug the SD card into a card reader so you can display the files on the computer. You should see some .bin files in the APM/LOGS folder. These are the files loaded into the plotter at https://www.flightcoach.org/ribbon/plotter.html You'll see a button on the right side of the screen to load the .bin file and then set the display/site parameters etc. If you're lucky, the plotter will automatically recognise your flying site. If not, we suggest contacting the Flight Coach people about adding your site to their plotter. **Note: When refitting the SD card to the Black Box, DON'T use too much force. If you push too hard the connector solder joints can be damaged.**