

Dear user

This manual describes first steps associated with FPV starting kit. It covers only basics of installing a set in the model. Full versions of User Manuals are available to download on website: <https://www.pitlab.com/fpv-system/download.html>

In case of things not covered in User Manual, your suggestions and warranty issues please use the support email: pitlab@pitlab.com

Setup of OSD and Autopilot should be performed in the order described in the following paragraphs.

Power configuration

- The **OSD** is supplied from **+12V** (5 - 14V depending camera and transmitter requirements) by black and red wires. The same voltage is used by: video part of the OSD, camera and video transmitter. Due to possible interferences from the engine, it is recommended to use separate video packet.
- **Autopilot** is powered by **+5V** (4.8 - 8.3V depending servos), the same that powers RC receiver and servos. It is recommended to use pulse BEC instead of linear one build in ESC, because of may overheat due to strong servo operation during stabilisation mode and autonomous flight.

The recommended power sequence is:

1. RC and Autopilot power (5V)
2. Video and OSD power (12V).

Delayed for about 1 minute supplying the OSD and video transmitter allows faster GPS navigation start (catching FIX - signalled by LED on GPS module). The 12V circuit is backedup from 5V power source. Some cameras may not initialise correctly from such low voltage. In this case connect 12V first.

External device connectors

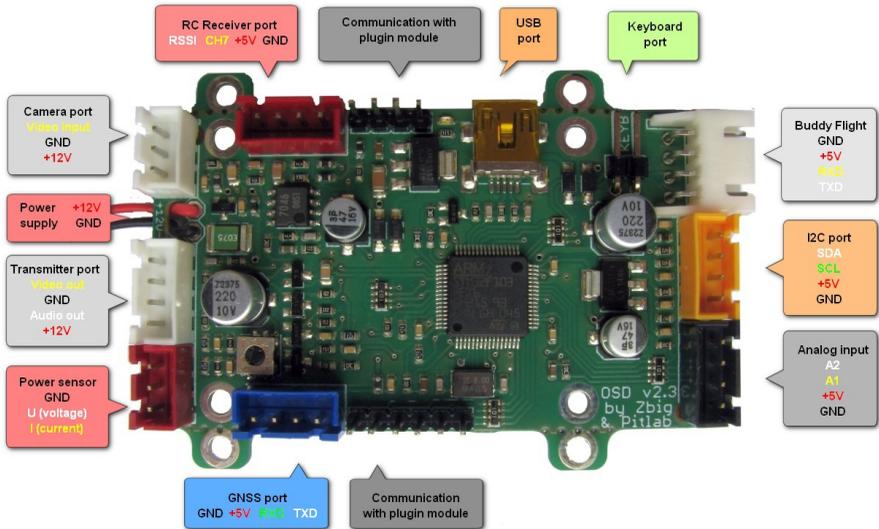
Devices are equipped with a JST connectors. It protect against reverse connection, self disconnection during flight. Additionally colours uniquely identify the function of the connector. On the underside of the PCB is description of connector function and the individual signals.



Caution! *Never disconnect by pulling on the cord. Pull the plug or use tweezers or a screwdriver (after power disconnecting)*

OSD

Diagram describes the purpose connectors and individual signals.



To the OSD board we connect the most important devices: camera, AV transmitter, GPS receiver, current sensor and temperature sensor.

Supplied cables to the camera and AV transmitter are provided only connector on OSD side. The other side of the wires should be soldered to the wires supplied with your camera and AV transmitter.

Current and temperature sensors and a GPS receiver manufactured by PitLab already have the appropriate connectors and can be simply plugged into a dedicated JST socket. Current sensors supplied in the kit are pre-calibrated in the OSD. If you change the sensor to another (with a different range) it must be calibrated in the OSD. Description of the calibration procedure is in the User's Guide.

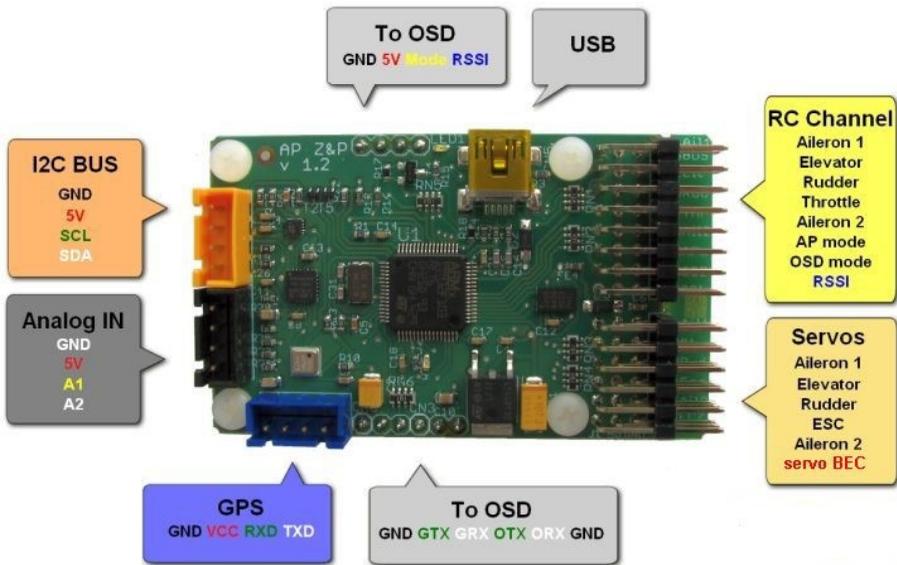
If you need to connect the sensors from other manufacturers (such as the air speed sensor from EagleTree, or analog sensor connected to the input A2 in the black connector) use a set of JST plugs available in PitLab.Shop. Cables with JST plugs also can be purchased in the online stores like HobbyKing (cable with plug for LiPo balancer)

After connecting camera and launch the OSD, you can adjust the visibility of the black borders around characters generated by the OSD according to your needs to ensure comfortable information viewing.

For this purpose use potentiometer located near blue GPS connector. The adjustment should be performed on the contrast image so the character are visible on a dark or light background.

Autopilot

Diagram describes purpose of the connectors and individual signals.



To Autopilot board we connect:

1. GPS receiver (instead of hardly accessible OSD connector),
2. RC receiver (parallel signals using 7 cables or CPPM or SBus via single cable)
3. Servos and BEC 5-8V supply on last servo connector.



Caution! Don't connect air speed sensor nor temperature sensor to Autopilot board. Those sensors are supported only by OSD.

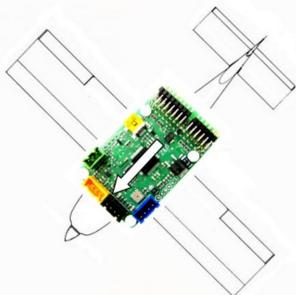
Installation OSD and Autopilot in the model



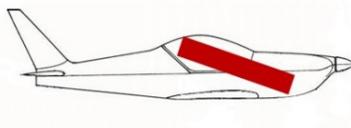
Caution! Autopilot board must be carefully installed in the model because is reference point of the equilibrium model. Board mounted uneven will force uneven flight.

It must be installed reliably so not to change position during flight and elastically to dampen vibration from the drive.

Proper installation is shown on the picture below:



Examples of improper mounting were presented on drawings below



Autopilot leaning forward



Autopilot tilted to the left

OSD menu

OSD is equipped with a full screen configuration menu controlled by the keyboard or by using RC channel connected to 3-position switch on TX. Operation with the RC switch is as follows:

Calling the menu - the switch is in the minimum. PPM pulse duration is $<1.25\text{ms}$

Changing the menu item - the next occurs after withdrawal of the switch to the neutral and back to the minimum

Select / execute the command - when the selector switch is in the maximum (PPM pulse $>1.75\text{ms}$) or leave the switch in the minimum for 5 seconds.

Closing the menu - is done automatically by leaving the switch for 5 seconds in the neutral position or select a menu command.

For description of the menu functions refer User Manual of the OSD and Autopilot.