
ImmersionRC A/V PowerBox

Overview & Operating Instructions
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Overview

Ground-station Companion

Today's ground-station is typically an array of devices, LCD monitors, LCD goggles, video recording devices, antenna trackers. These devices all have to be powered, and interconnected with audio/video connections.

The PowerBox^{AV} simplifies the cable mess, and provides clean, redundant, distributed power.

Its video buffer ensures that each of the connected devices receives a clean PAL/NTSC signal, with correct video level specifications.

For video sources which are slightly out of spec, an internal trimmer allows the level to be corrected.

Filtering

Each of the DC power jacks contains a heavy-duty LC filter, to ensure that each A/V device receives clean, glitch-free power.

A resettable fuse, and reverse-polarity protection protects against the occasional wiring mishap.

Low Voltage Alarm

An internal low voltage alarm automatically senses the potential of the connected power source(s) and sets an appropriate alarm threshold, giving you plenty of time to land before the dreaded black screen kicks in.

Interconnects

All FatShark and ImmersionRC ground-based equipment uses standard 3.5mm 4-pole jacks for video/stereo-audio connections.

The PowerBox is supplied with a selection of long, and short 3.5mm->3.5mm cables, to clean up ground-station wiring mess.

No more cumbersome RCA/Phono connectors!

Features/Specifications

- Twin Redundant power inputs
- 4 filtered power outputs
- Fused input, reverse polarity protection
- 4 buffered A/V outputs
- Standard 3.5mm 4-Pole jacks, used on all FatShark/ImmersionRC equipment
- Interconnect cables supplied
- Low-battery detect, on each redundant power input
- Audible Alarm for low battery
- Adjustable video gain, correct for out-of-spec receivers
- Dimensions: 85 x 74 x 23mm
- Weight: 120 g
- Power Requirements : 6-12v, 250mA max.

Interconnects

Two kinds of connectors are used on the PowerBox, 2.1mm DC Jacks, and 3.5mm 4-pole A/V jacks.

Power

On the Power side, In1 and In2 are the two redundant power inputs. These are typically fed from a 3s Lipo, or equivalent.

Each input is fed via a low drop Schottkey diode, to the main power rail. This allows two power sources to be connected simultaneously without any risk of damage. The PowerBox will draw from the power source with the highest voltage.

Out1,2,3,4 are filtered power outputs, which may be used to drive other Ground Station equipment, such as LCD Monitors, Antenna Trackers, etc.

Audio/Video

The connector marked A/V In should be connected to the output of your FPV A/V receiver. If an ImmersionRC receiver is used, which has a matching 4-pole A/V connector, then a simple 4-pole -> 4-pole cable may be used, eliminating bulky phono connectors.

If a non-ImmersionRC receiver is used, an adapter cable is available, interfacing between 3 phono connectors (Composite Video/Audio Right/Audio Left) and the 4-pin standard connector.

Each of the video outputs are buffered, which allows up to 4 devices to be connected.

In a typical installation, an antenna tracker will be connected to one output, a recording device to another, the pilot's video goggles to another, and a guest's set of goggles to the last output.

PowerBoxes may be chained to add an additional three outputs if required.

Operation

When powering the PowerBox, one or more beeps will be heard, depending upon the currently programmed voltage threshold.

- | | |
|---|----------------|
| 1 | No Alarm |
| 2 | 9.5v (default) |
| 3 | 10.5v |
| 4 | 11v |

The threshold may be changed by following the Programming section below.

During normal use, a periodic beeping indicates that the battery is low, and should be a sign to land/recover the model!

Programming

The PowerBox contains a small microcontroller which monitors the power input voltages. It also contains an audible alarm which sounds to warn of a low Ground Station battery.

The voltage threshold at which the alarm sounds may be changed if required, using the following procedure.

A total of 4 settings are available: Off, 9.5v, 10.5v, and 11v. The default setting is 9.5v.

To change the threshold:

1. Connect a 2s LiPo pack (NOT 3s) to IN1, with nothing connected to IN2
2. *5 short beeps should be heard, this indicates entering programming mode*
3. Connect a 2s OR 3s pack (> 6v) to the IN2 connector, a single beep will be heard, indicating that the alarm is now disabled
4. Remove, and re-connect the IN2 pack, each time that this is done, the beep count will increase. As soon as the desired setting is reached, remove the connectors from IN1 and IN2, completing the operation.
5. To confirm, power the PowerBox using IN2, and make a note of the number of beeps heard at powerup, this should correspond to the setting programmed above.

The beep count to threshold mapping is as follows:

- | | |
|---|----------------|
| 1 | No Alarm |
| 2 | 9.5v (default) |
| 3 | 10.5v |
| 4 | 11v |

Video Level Adjustment

In most cases, the factory-set video level setting will not need to be changed.

In cases where 'fussy' devices are used, such as certain older DV camcorders, the level may be tweaked, either higher or lower, by means of the internal trimmer.