



## **VSPARS Wireless Hardware**

### **System Overview:**

VSPARS is a sail shape recognition system for all boats. The VSPARS Wireless hardware systems are pre-configured so that results can be achieved with minimal setup. The system controls GoPro or VSPARS IP cameras to capture sail shape and rig deflection automatically using the VSPARS RealTime software.

### **Why go Wireless?**

The wireless application is ideal for:

- Boats that need a fully portable / removable system
- Operation from on or off the boat – e.g. coach boat
- Comparison of sails on multiple boats on a single system in real time

### **Hardware**

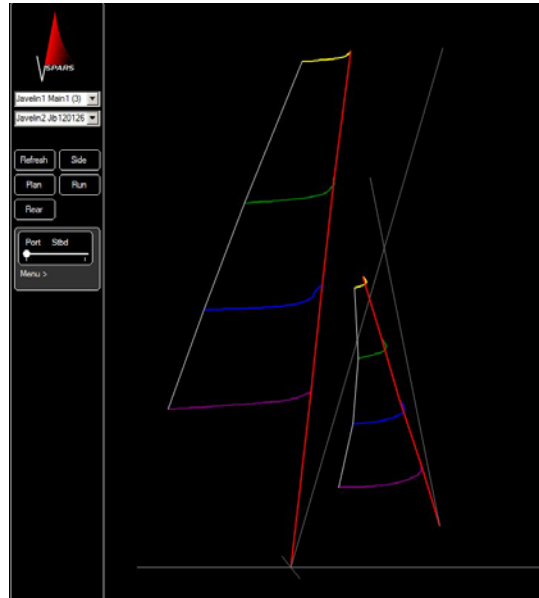
The VSPARS Wireless hardware typically consists of:

- Up to 4 customised GoPro or IP cameras per boat. Temporarily or permanently fixed to the deck with rugged mounts.
- Onboard comms box (GoPros only) – talks to the GoPro networks and combines it into a single stream. Light weight, fully waterproof, suitable for mounting on capsizing dinghes. High performance rechargeable battery.
- VSPARS box – a miniature embedded PC runs the VSPARS RealTime software, receiving images from multiple onboard boxes or IP cameras. Battery and external power options.



The custom VSPARS IP cameras or GoPro Hero 3+ cameras are provided with deck mounts and spray guards, and can be mounted either on flat on the deck or vertically on the cockpit wall. These cameras are pre-configured to communicate wirelessly to the on-deck waterproof control box. The camera mounts are connected to base plates which are attached to the deck by the user. VSPARS recommends using 3M Dual-Lock or Sikaflex.

The VSPARS control box receives the images, calculates the sail shape automatically then optionally sends out the results via UDP to display devices. A VSPARS app for Android phones can be used to access additional triggering functions.



Both wide and narrow angle lens distortion calibrations for these cameras are supplied with the system, allowing for capture of both offwind and upwind sails respectively.

The control box features an external switch and charging socket. The entire system runs for over 4hrs on a single charge (limited by the GoPros). For longer durations, the VSPARS IP cameras are recommended, which can run for over 8hrs. The working range between target boat and chaseboat is around 50-100m dependent on conditions and aerial mounting.

### ***Installation:***

Installation is as simple as mounting the cameras and Wireless Receiver on the deck and measuring the position of the cameras away from the base of the mast and their angle to the centreline. All steps are detailed in the user manual. Once the cameras are mounted, it is easy for an untrained operator to process and output sail shapes following the user manual. Alternatively, one of the VSPARS team can install the system and demonstrate its use.

### ***Software overview:***

The hardware runs the VSPARS RealTime software. See separate sheet for more details.

### ***Summary of features:***

- *fully wireless, waterproof*
- *customisable battery life*
- *suits short-term installations*
- *all hardware supplied*
- *integration with boat data*
- *runs VSPARS RealTime software*
- *wireless output to a range of PDAs, displays, etc.*