



OckamSoft 5 **Driver application**

Design principles

As the sailing world becomes more connected, the definition of just what instruments are needs to change in order to become more useful. Classic instrument systems have evolved from stand-alone (1 sensor feeds 1 display), to distributed (multiple sensors and displays connected to a processor). The next stage is instrument data becoming available to multiple applications and hardware items on the boat, and even extending out of the confines of the hull. This has been true in the America's Cup for more than a decade, but at a high price in terms of support and hardware.

OckamSoft 5 has been designed to facilitate this new extension of what instruments are.

Data Images and data are now required to be displayed on more than one device or program at the same time. PC applications, cockpit handhelds, PDAs and instrument displays are all graphical, and need lots more than just a few numbers to be useful. The OS5 driver's primary job is to provide multiple connections to all the data available.

In addition, a change on one device needs to be propagated to all the other devices (e.g. pinging a mark on your PDA is immediately reflected on the racecourse application running on your MdWd).

Web info The Internet is full of useful and legal data for use while sailing. Examples include many kinds of weather data including GRIB files, weather buoy readouts and radar weather displays.

When an internet connection is available, OS5 can display this information as part of its normal repertoire. Vysion displays can also display web information without the need for an onboard computer.

Calibration Good calibration leads to more wins and greater peace of mind. However, it is a pain to do, and absorbs valuable resources. DeWiggler (now included as part of OS5) provides that extra crew member to help with this essential task. With a live internet connection, calibration can be accomplished remotely and in real-time using Remote Coach™.

Troubleshooting With a live internet connection, your instrument system can be accessed from off the boat. Ockam provides the Tshooter expert application to allow real-time analysis.

Embedded vs. PC OckamSoft 5 and Vysion are compatible with each other. OS5's racecourse application is actually the Vysion software optimized to run on a PC. If you wish, you can install a Vysion processor and do away with an onboard PC altogether.

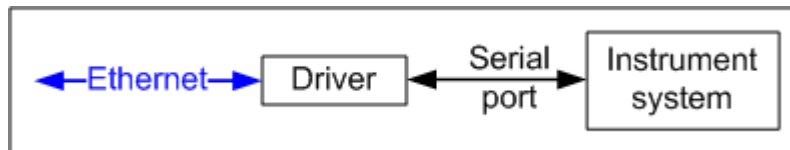
Data distribution

Race/Vysion and other onboard programs such as Expedition preferably use Ethernet for communications. This is an evolution brought about in part by the abandonment of serial ports by Windows, but also by the increase in the amount of data now available.

An important function of the OS5 driver is to convert legacy serial input into Ethernet for use by Race/Vysion and other onboard programs.

Classical Ockam system using serial output

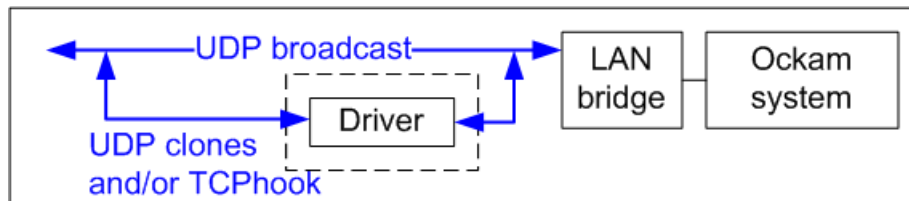
Instrument data enters the driver thru a serial port and is output over Ethernet in two forms, and on a virtual serial port (vPort) for another legacy serial input application on the same PC.



Modern system using the LANbridge

There is also the possibility that the instrument system is equipped with a LANbridge which produces Ethernet output. In this case, the driver is not required for data conversion, but may still be employed when needed for database distribution functions.

The driver receives instrument data via UDP broadcast and produces the TCPHook protocol and multiple clones of the UDP broadcast if required.



Rules of thumb for using the driver

If your instrument system does not have a LANbridge;

- The driver needs to run in order to convert serial data into UDP for use by Race/Vysion.
- The instrument system connects to the driver over a serial port.

If your instrument system has a LANbridge;

- The driver does not need to run in order to use Race/Vysion.
- If more than a single application on the same machine requires instrument data, the driver must run in order to provide UDP 'clones' and/or the TCPHook for these applications. In this case, the driver gets the primary UDP port from the LANbridge, and creates duplicates for the applications.

UDP broadcast

The UDP broadcast is a flexible and simple protocol for distributing data. It carries instrument, GPS and other data streams at the same time. Because of operating system limitations, only one application on any given machine can open the UDP broadcast on a given port. However, the driver can create clones on different ports that will allow multiple applications on the same machine to use it.

Read more at <http://ockam.com/docs/UDPbroadcast.pdf>.

TCP hook

TCP hook is a copy of the Ockam bus transported via TCP protocol. The data is less varied than UDP broadcast, but it can be accessed by any number of applications on the same or other PCs.

Setup

Race/Vysion setup

Navigation

Use the navigation buttons at the bottom of the page to step through the available pages. If the navigation buttons are hidden, tap on the screen to show them.

Main setup

Each page includes a setup button. Some 'Setup' buttons bring up specialized dialogs for that page type. These pages have a 'Main' button to go to the main setup.

In this dialog you can set the palette, UDP port, font size and other parameters.

Save Last

When enabled, the last page displayed will be selected on startup. If disabled, the first page is enabled.

Outline cells

When enabled, numeric values are outlined.

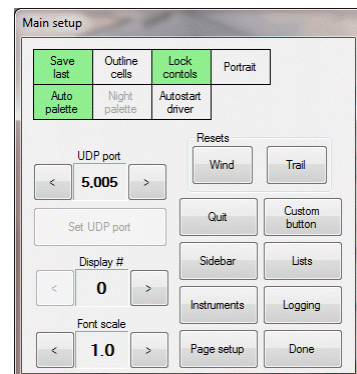
Lock controls

When enabled, the navigation buttons remain visible. There is a button to hide them without resorting to 'Lock controls'.

When enabled, navigation buttons disappear after 10 seconds. Touching anywhere returns them.

Portrait

Switches between portrait and landscape display.



Auto Palette & day/night Palette

The display has a day and night mode with corresponding palettes. The mode can be automatically selected by the 'Lights' frame of the Ockam system, or manually in the main setup.

Autostart driver

OS5 only: When enabled, the OS5 driver is automatically started. If you use an external data source (i.e. an external UDP broadcast), you probably do not need this.

Font scale

Changes the relative font size on all pages.

UDP port

Sets the port used for receiving instrument data. This number must be the same amongst all users of the broadcast.

Display

Sets the address used by the display. This is used for page changing by Lynx and other programs. More information at <http://www.ockam.com/docs/RemoteCommands.pdf>.

Resets

Resets the wind history and the vessel track.

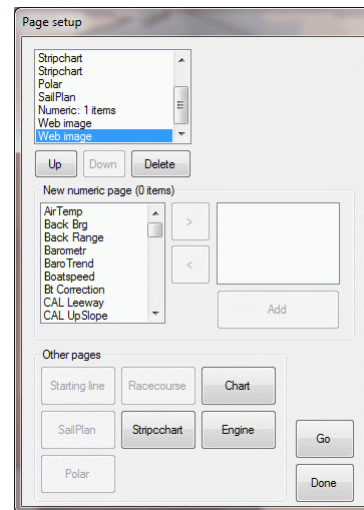
Setting up pages

From any page, press Setup. If the dialog is for a specialized page, press Main. Then press Page Setup.

The upper left list shows the pages currently assigned. You can select one of these and press Go to jump to that page.

To add a new page, there are specialized pages listed in the Other group. If the button for the desired page is active, pressing it will add that page to the list.

For numeric pages, use the upper right group. Select an item from the left-hand list and press '>' to move it into the right-hand list. When done, press Add.

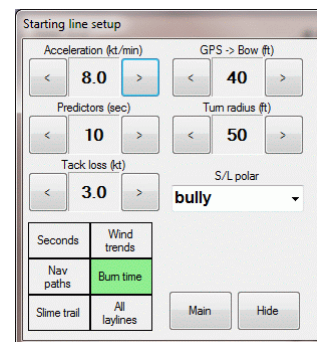


Starting line setup

Starting line setup controls several items that affect the display. If the 'Setup' button is not visible, press the 'More...' button.

Checkboxes

- Seconds shows stopwatch in seconds (i.e. not m:ss).
- Nav paths shows the calculated courses to the line.



- Burn time determines whether the line intersect times are stopwatch or time to go.
- Slime trail shows the boat's track.
- All laylines show current, max left and right laylines.

Spinners

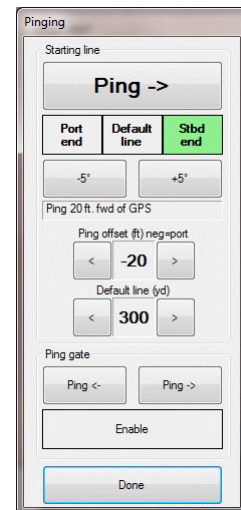
- Acceleration sets the rate at which the boat accelerates to target speed.
- GPS -> Bow sets the distance Race/Vision offsets the GPS position to where the bow is.
- Predictors sets the time predictor on the starting line.
- Turn radius sets the standard turn radius used for calculating line intercepts.
- Tack loss sets the speed cost of a tack. This speed loss is added when modeling a line intercept on the opposite tack.

Pinging

This dialog is used to position the starting line (and gate if the course has one).

There are 3 things to keep in mind when pinging:

1. Don't ping the line when the bow is there. Race/Vision calculates where the bow is by modifying the GPS position based on heading and the "GPS -> Bow" setting (see above).
2. In order to keep heading gyrations from messing up the position, you set "Ping offset" to define how far off centerline the mark will be when you ping it. Positive is to starboard, negative to port.
3. The point on the boat least susceptible to being messed up by heading change is the center of the boat (the 'centroid'). For practical purposes, the centroid is assumed to be 1/2 way from the GPS to the bow.



Sometimes you can't get to the other end. For these situations, you can set a 'Default line' which is established from the last pinged end. The default line will be established perpendicular to the current wind direction. When needed, you can then rotate the line using the "+5°" and "-5°" buttons.

Stopwatch control

