

OckamSoft™ 4.0
Control & Display Program Suite
for Windows & PocketPC

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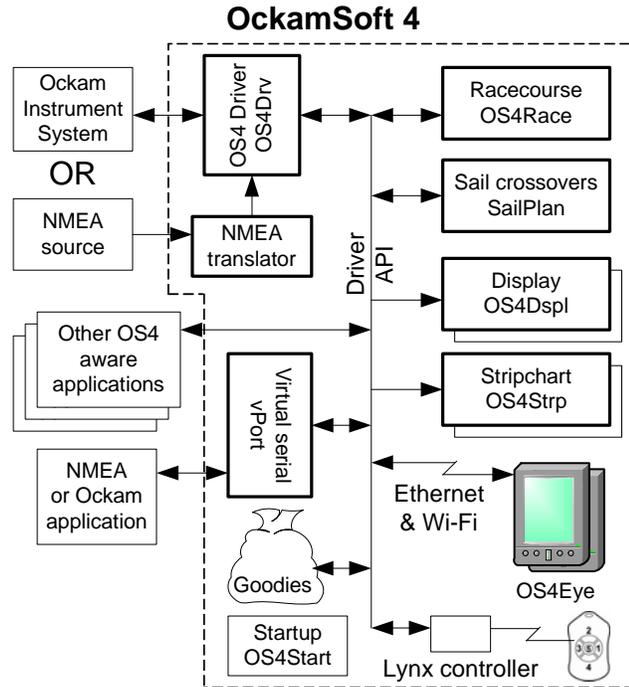
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What is OckamSoft 4?

Congratulations, and thanks for considering OckamSoft 4. As with previous versions, OS4 is a set of program modules, any or all of which may be run at the same time. With the advent of the wireless PDA, OS4 has been extended to serve more than one processor. For example, the racecourse program is now a server, allowing PDAs to display and control the race.

The components of OS4 include:

1. [Racecourse](#) – a chart plotter that includes features specifically for sailboats including time to laylines, wind arrow, polar with targets and Vmc, summary report and more.
2. [Display](#) – a window containing from 1 to 16 virtual instrument display panes. The panes arrange themselves, allowing vertical or horizontal orientation. You can activate multiple display windows.
3. [Stripchart](#) – a graphical plot of up to 4 instrument functions vs. time. The time scale can be set from 5 minutes to 3 hours. You can activate multiple stripchart windows.
4. [Eye](#) – an application for the wireless PocketPC, which provides on-the-rail display, stripchart and instrument control functions.
5. [vPort](#) – a virtual serial port that supplies NMEA and/or Ockam data to an application that would normally be expecting its own dedicated physical serial port connection to an external data source (e.g. GPS). In other words, you could run MaxSea routing software or Nobeltec chart plotter and OckamSoft at the same time, and both would receive complete instrument and GPS data. With revision 4.06, vPort can also supply data to the driver and instrument system if the application outputs NMEA or Ockam commands.
6. [SailPlan](#) - displays sail crossover information, current and next-leg true wind conditions, apparent wind, targets and wind statistics.
7. [NMEA_{XL}T](#) – translates a NMEA-0183 source into Ockam data. This allows OckamSoft 4 to use foreign instrument systems as input. Because NMEA sources don't provide some types of data, the normal functionality of OS4 is impaired, but it is sufficient to run a chart plotter without an Ockam system.
8. [OS4 EtherServer Driver](#) – the glue that binds the components of OS4 together. Provides many services that simplify access to data and control of the instruments.
9. [Goodie bag](#) – a collection of sample charts, applets, demos, source code, header files, etc. Someday we may completely enumerate them, but not right now.



Hardware requirements

OS4 was written for Windows XP/2000. We've tested it with '98 and it works (except for vPort, see below), but no guarantees. The machine must also have some kind of network connection (Ethernet or Wi-Fi).

vPort requires Windows XP/2000 and will not install on earlier systems. It also needs NMEA input. For the instrument feed, that means:

- A Tryad system OR
- A classic system with 041 GPS interface and grey RS232 interface rev. D or later OR
- A system inputting data thru the NMEAxit application.

You might want to review our screed on NMEA distribution. It goes into detail on the Ockam + NMEA thing, and which revisions of interfaces are required.

The white paper is at <http://www.ockam.com/NMEAdistribution.pdf>.

How OS4 Registers

The main OckamSoft 4 applications key to the serial number of the first Network Interface Card (NIC) encountered at registration time. Therefore, changing the network or Wi-Fi card arrangement (e.g. removing or adding a NIC card, or disabling the main NIC) may de-register your OS4.

What is a NIC? Most hardware that uses network technology has a serial number. These days, most machines have a built-in Ethernet connection. Other devices include wireless radios, cell phone modems and USB Ethernet adapters.

If your machine has a built-in Ethernet connector, remove or disable all other NICs before registering. This ensures that the registration will key to the permanent NIC. After registration, you may add or remove NIC cards without de-registering OS4.

If your machine only has a removable NIC card, you will have to register and run OS4 with that card installed.

If you want to take OS4 with you, then you should key OS4 to a removable NIC that goes with you to the next venue. To accomplish this;

- If the machine has built-in Ethernet, disable it temporarily. Also remove all other NIC devices.
- Register OS4 with your personal NIC attached, and write down the unlock codes.
- Re-enable any Ethernet devices.
- When you move on to the next boat, install your NIC and OS4, and enter the unlock codes.

Installing and Setting up OS4

OckamSoft 4 is distributed as try-ware; Download it off our [website](#), get a CD free for the asking, or copy it off a friend's PC. After installation, some of the components will run for a limited time (i.e. as a demo), then quit. The idea is to try them out and confirm correct operation, then buy (register) only those items you want.

OckamSoft 4 runs on a PC with Windows XP or 2000, and requires a network connection (either Wi-Fi or Ethernet) and a serial port. Earlier versions of windows can't run Vport, and there may be other issues involving network protocols.

1. Install the software.
 - a. 7 applications and a number of support files are copied to \Program Files\OckamSoft 4 (or a directory you specify) on your hard drive. For a complete description, see [List of Files](#) at the end of the manual.
 - b. Your start menu will contain the OckamSoft 4 program group with 9 shortcuts for starting various applications.

- c. A shortcut Start OS4 is added to your desktop.
2. Establish communications between your computer and your Ockam system.
 - a. Connect the instrument system to your computer and turn it on.
 - b. Use a terminal emulator (see [Using HyperTerminal](#) at the end of the manual) to establish the parameters of your serial connection to the instruments. If the baud rate is 4800 or lower, we recommend changing the settings of the interface to 9600 baud or greater. This will increase the bandwidth to accommodate both Ockam and NMEA data. Once you have the correct settings, exit HyperTerminal.
 - c. Start the Driver application Start, All Programs, OckamSoft 4, Driver. Then left-click the driver icon  that appears in the tray near the clock, and select Driver...
 - d. Select the Comm port tab and set the serial port and settings determined in (b).
 - e. If your RS232 interface is revision C (black box), you should check Limit output rate. Revision D (gray box) interfaces and the T1 serial port do not need limiting.
 - f. Don't check Use frame checksum unless you know you need to.
 - g. Check Enable NMEA input and Enable data on Ethernet.
 - h. On the Status tab, Frames Received should be counting up.
 - i. On the Variables tab, check that you are receiving sensible data. In particular, you should check receipt of Lat/Lon.
 - j. While you have the driver dialog up, familiarize yourself with the other important tabs.
 - BIFs (Built-in functions) calculate and output high-level functions to the instrument system.
 - Control Send various commands to instrument system, e.g. setting averages and options, controlling the stopwatch, etc.
 - Magnums Switch all your remote displays (Magnum & Matryx) to various modes you create, such as Prestart, Windward, Downwind, etc. They can also be set to automatically switch based on stopwatch and true wind angle.
 - Polar establishes the polar to be used on your machine.
3. Set up the multi-start application, which is a small application used to start all your OS4 applications with a single click.
 - a. Run the MultiStart application in setup mode: Start, All Programs, OckamSoft 4, MultiStart (Setup).
 - b. Check the desired applications. Display and Stripchart can have multiple instances (more than one window open at the same time). If you desire this, change the count in the associated text box.
 - c. Be sure NMEAxt is unchecked unless you are using OS4 with a NMEA-0183 source other than Ockam.
 - d. Press Start Now. The various OS4 applications should start.
 - e. Drag and resize the applications as desired, then close them. The next time they come up, they should be in the same arrangement.
4. We strongly suggest installing a polar file specifically designed for your boat. OS4 depends heavily on polar information for tacking angles and time to laylines.
 - a. Obtain the polar files (see <http://www.schwenn.com/>) and install them on your hard drive.
 - b. OckamSoft 4 uses the TPO file type. If you have to convert from WKS to TPO, start the Convert Polar application, Browse, locate the WKS file, and press Convert.

- c. Open the driver (see 2c above), click on the Polar tab and press Select. A standard file dialog appears. Find and select the polar TPO file.
5. If you plan to use charts...
 - a. Obtain MapTech charts (<http://www.maptech.com/>) and install them on your hard drive.
 - b. Start the racecourse application Start, OckamSoft 4, Racecourse.
 - c. Select a chart (see [Selecting a chart](#) below).
 - d. If you selected a chart without the boat on it, you can force the chart to become visible by clicking View until the [Chart] mode is selected. Then you can scroll around the chart by clicking on the new chart center.
 - e. Confirm the ship's position is correct.

Regaining control of your windows

OS4 version 4.03 and earlier forced application windows onto the main screen on startup. This was to allow you to always see and adjust your application windows. We have discovered that some clients use the multiple monitor feature of Windows XP/2000, where an application window can be dragged onto a second monitor.

With version 4.06, the application windows are no longer forced to the main screen because they might be positioned on the secondary screen. If you get into a situation where the application window is not visible, you can force the window position to the main screen in two ways:

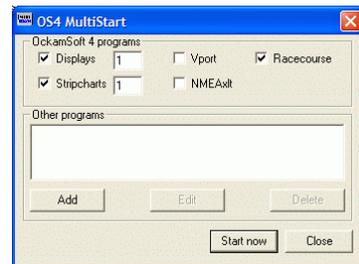
1. Hold down the shift key when opening the application.
2. Right-click the application button on the start bar and select 'Home Window'.

MultiStart

This application (file OS4Start.Exe) eliminates the multiple mouse moves needed to start the various OS4 applications.

You will notice that there are two shortcuts in the Start Menu, OckamSoft 4 group; MultiStart (Setup) and MultiStart (Execute).

The difference is in the shortcut's command line argument. If OS4Start is executed plain, it comes up in Setup mode, where you can check and uncheck, change number of instances etc. Pressing the Start Now button starts the selected OS4 applications, and OS4Start quits.



If the command line contains 'auto', the application starts the selected applications immediately and quits, never becoming visible. This is the mode for MultiStart (Execute), and the shortcut on the desktop.

You can specify other files to execute by dragging (or Adding) them to the Other programs window.

Registering OS4 components

Unregistered components of OS4 run 5 minutes and then stop. This is enough time to test, evaluate and decide whether you wish to purchase that module. When you decide you want it, purchase an unlock code from Ockam. (See [How OS4 registers](#) above.)

You will need the following information:

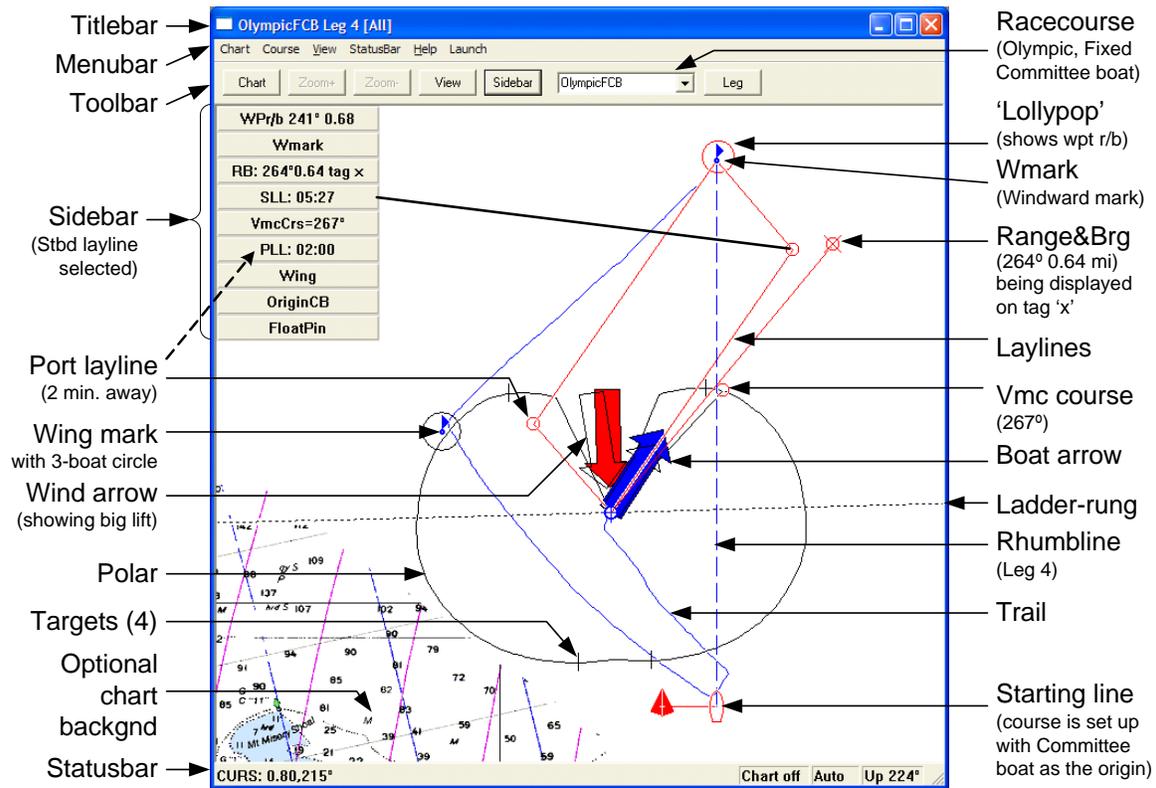
- The PC or PDA description and purchase date.



- The operating system description (e.g. Windows XP pro).
- For each module to be registered, the program name and uplink code. Get this information as follows;
 - For Racecourse and Stripchart, go to the help menu and select Register...
 - For NMEA translator and vPort, press the Register button.
 - For Display, click on one of the display panes (or the system menu icon in the upper left corner), and then select Register.

Communicate this information to Ockam to obtain the unlock codes. Then enter the unlock code into the text box and press OK. If you are returning to the registration dialog, you may notice that the uplink code changed. Don't worry, just enter the unlock code and the application will unlock.

Racecourse



This view (chart turned off, autoscaled and oriented to optimize display of the racecourse) shows many of the features that differentiate OS4 from other chart plotters.

Features of the Racecourse Screen

Feature	Description	Control
Statusbar	Shows the state of the chart, scale and orientation, and Cursor range and bearing, Lat/Lon or Ships position.	Cursor RB/LL: Statusbar menu
Sidebar	Lists the various points of interest and provides a way for touchscreen PCs (which have no right-click capability) to access individual items for editing, deleting etc.	Location: Toolbar or Chart menu, Sidebar
Chart background	May be switched on and off and scaled in 6 steps between 10 and 200%. When enabled,	Open: Chart menu Zoom: Toolbar

	window orientation is always True North Up. When disabled, window orientation is Course up.	Show/Hide: Toolbar
Boat arrow	Displays heading and speed, and relative-to-target speed	View & color: Course menu, Settings
Wind arrow	Displays wind direction and speed, and relative-to-average	View & color: Course menu, Settings
Laylines	Shows estimated time to tack for the mark on both tacks. Current effect can be included.	View & color: Course menu, Settings. With current:
Rhumbline	Indicates the beginning and end of the current leg.	View & color: Course menu, Settings
Ladder-rung	Otherwise known as the "ahead-behind" line. On free legs, the ladder-rung is perpendicular to the mark bearing. On up and downwind legs, the ladder rung is perpendicular to the true wind.	View & color: Course menu, Settings
Lollipop	Shows where instrument Waypoint R/B is pointing.	Course menu, Settings
Boat range rings	Centered on the boat. Radii can be miles, minutes or boatlengths.	Course menu, Settings, Polar&Rings tab.
Waypoint ring	Waypoints can have a single ring with specified radius and unit of measure.	Sidebar, Edit
Polar overlay	Shows ships performance and either Vmc angle or Wallys.	Course menu, Settings, Polar&Rings tab.
Trail	Shows the ships track over specified time.	View & color: Course menu, Settings, Features tab. Length: Course menu, Settings, Other tab.
Notes	Post-it notes stuck to the chart.	Create: Click on chart. Delete: Click on Sidebar pane.
RBs	Post-it notes showing range & bearing from current position. There can be multiple RBs, and one of them can be output to the instruments.	Create: Click on chart. Delete: Click on Sidebar pane. Output: Click on Sidebar pane.
Course Information	Shows leg times for the current course. Includes "What if?" ability to change the wind and current. Leg times can be delta, cumulative or real-time.	Course menu, Info

Toolbar buttons

Chart	Turns the chart background on and off.
Zoom+	Changes chart scale to show more detail.
Zoom-	Changes chart scale to show less detail.
View	Selects 1 of 6 views described in detail below.
Sidebar	Switches the sidebar from side to side and top to bottom.
Course	Selects which course to use.
Leg	Switches the current leg to the next mark. This can also be done with the Lynx key fob from on-deck.

Keyboard Shortcuts

Ctrl+F	Displays the Course Information dialog.
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Ctrl+I	Zooms the scale in (more detail).
Ctrl+O	Zooms the scale out (less).
Ctrl+N	Selects the next mark.
Ctrl+V	Selects the next view
Ctrl+T	Turns mark text on and off
Ctrl+U	Turns the chart background on and off

Chart Views

When a chart is open and enabled, the Views available are:

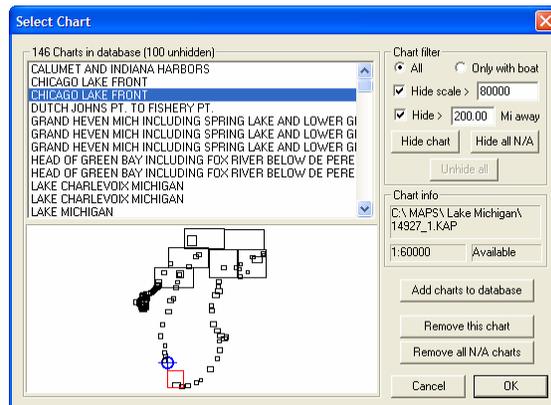
<u>Centered</u>	scrolls the boat to the center at all times.
<u>All</u>	attempts to scroll the boat and all marks into view. If not possible at the current scale, Boat & Next is attempted.
<u>Next</u>	attempts to scroll the boat and next mark into view. If not possible at the current scale, the boat and as much of the rhumbline as possible are scrolled into view.
<u>Manual</u>	allows you to scroll the chart by left-clicking a point and selecting 'Chart center here'.
<u>Chart</u>	similar to manual except the chart center cannot be scrolled off the current chart.
<u>Start</u>	draws laylines from the two ends of the starting line. If the chart is off, the window scales to include the line and the boat only.

When no chart is in use (i.e. not open or disabled), the racecourse is always scaled to fit the screen. The racecourse is oriented with the windward leg up and scaled appropriately for All, Boat & Next and Starting Line. Manual and Center Boat are inoperative.

Selecting a chart

Pull down the Chart menu and select Open. The chart selection dialog has access to information on the charts currently in the chart database, including charts that might not be on the PC at present (e.g. maybe they're on a CD that's not inserted). If the heading says that no charts are available, go to [Maintaining the chart database](#) below.

There are filter controls that let you view a subset of known charts by position, scale and whether or not the chart is available. In the screenshot, you will notice that large scale charts (>80000), and distant charts (>200 miles away) are filtered out, but "Only with boat" is not selected. With these settings, of the 146 known charts, OS4 is showing the 100 that meet the filter criteria. Turning "With Boat" filter on would hide most of the charts, showing only those that the boat is actually on.



Once the filter is set as desired, you then more easily select a chart by its title (e.g. "Chicago Lake Front" #14927), or graphically (the red square). The boat position is shown by the blue X. Note the text boxes that list the chart filename, scale and whether or not the chart is available. If the chart IS available, press OK. Otherwise you might have to insert the appropriate CD first.

Maintaining the chart database

Opening charts is a two-step process. First, charts are entered into the chart database. Then, those charts that have been entered are shown for selection. When you first run Racecourse, you must add charts to the database.

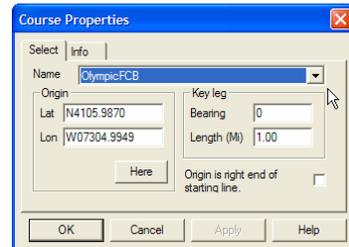
To add charts, press Add charts to database. A standard “File Open” dialog appears, allowing you select charts to be added. The chart types include scanned charts available from Maptech. You can select multiple charts using the shift and control keys.

The Remove this chart and Remove all N/A charts (all charts which are currently not available) buttons allow maintaining the chart database.

Selecting a Course

In Racecourse, there is ALWAYS a course running. You can only change the name and parameters.

1. Open the Course properties dialog (Course menu, Adjust...), and select the course from the Name droplist.
2. If you are near the origin, press the Here button to move the origin to where you are. Otherwise, the origin will be the last place the course was.
3. Check the Key bearing. If the first mark is a “floater”, the wind direction will have been filled in. If the mark is “fixed”, the current bearing will have been filled in.
4. If the windward leg length will be longer or shorter than 1 mile, fill in the leg length.
5. Press OK.



If the origin, bearing and scale are OK, you can change the course type using the droplist on the toolbar. If there is a chart open, you can also click on the chart to move the origin.

How courses work

In OS4, a course consists of a name, a set of waypoints and a route list. The waypoints define the origin, starting line and rounding marks. The route list defines the order the waypoints will be rounded. In addition, a course has a Bearing and Scale. These attributes are used to define the position of any of the waypoints that are floaters.

Waypoints have a position and an icon (amongst other attributes). The position can be either Fixed (a Lat/Lon) or Floater (a range & bearing relative to the origin of the course).

For example, the default **Wmark** waypoint is defined as 1 mile from the Origin, 0° from the course bearing. When you select a course, and specify a scale of 1.5 and bearing of 220, Wmark would be positioned 1.5 miles at 220° from the origin waypoint.

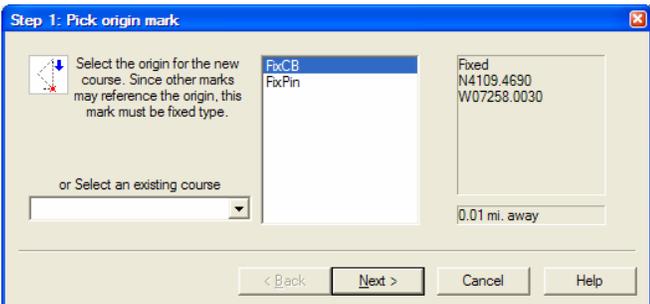
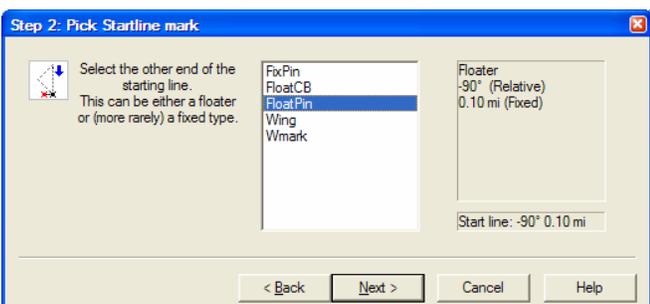
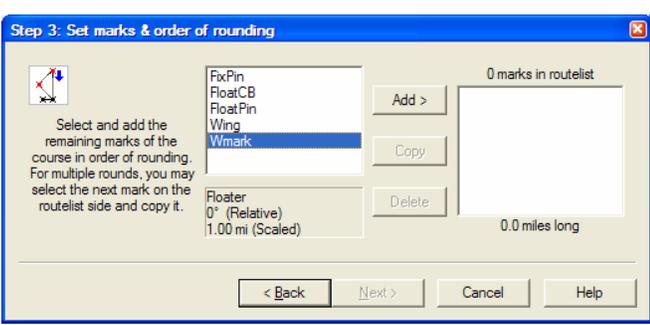
The origin waypoint defines the position of all other floater marks; therefore it must be fixed type. It also defines one end of the starting line; the pin (usually a floater) defines the other. There are three possible starting line scenarios. In all cases, the origin is a fixed type, and the other end can be either a floater or fixed.

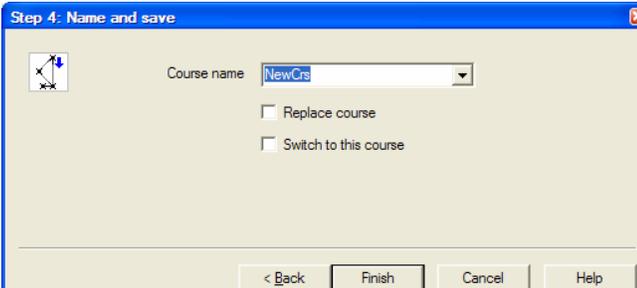
1. The course origin is a government buoy, a rock or some other fixed object, and the committee boat positions itself relatively. In this case the rock is the fixed **Origin**, and the committee boat is as a floater, defined at some distance and bearing (e.g. 0.1 mile from the origin and +90° (clockwise) to the windward leg).

- The committee boat remains fixed and the crash boat moves the pin into position. In this case the committee boat is the fixed **Origin**, and the Pin is as a floater, defined at some distance and bearing (e.g. 0.1 mile from the origin and -90° (counterclockwise) to the windward leg). The fixed position of the committee boat will be remembered and relocated to the same place the next time. You can also specify a new position in the Course/Adjust dialog.
- Both ends of the starting line are fixed. This tends to be the case for frostbiting where only the contestants are silly enough to get into a boat, or in distance races where the two ends of the line are too brobignagian to be moved.

Creating a Course

Before creating a course, check the waypoint list and be sure all the required marks are listed. If not, first add them. Then select **Course** menu, **Create...**

<p>1 Select the Origin waypoint. Only fixed waypoint types can be selected because other waypoints (floaters types) may reference the origin.</p> <p>You can also select an existing course to edit.</p> <p>Press Next.</p>	
<p>2 Select the starting line mark. This is usually a relative type (a floater) which is defined relative to the origin, but in some cases might also be a fixed type. If you selected an existing course in step 1, that course's starting line mark will be selected.</p> <p>Press Next.</p>	
<p>3 Select and add the turning marks of the course, in order. You can select from the right or left list, except you can't copy the last turning mark as the next mark. You can also delete marks, but only from the last backwards. This ensures that the checks made when adding a mark are not circumvented.</p> <p>Press Next.</p>	

<p>4 Name the course. If you had selected an existing course, that name is nominated. Otherwise a 'NewCrsN' name is generated.</p> <p>Press Finish.</p>	
---	--

Adding Notations, R/Bs and Waypoints

You can add notations (i.e. comments located at a desired Lat/Lon), Range/Bearings (a note that shows the range and bearing from the boat, and can also include a comment) or Waypoints (normally added via the Edit Waypoints dialog) to your racecourse.

Click the mouse at the location where you want the note, range/bearing or Waypoint. Select the type of note, optionally fill in the comment, and if desired, modify the position textboxes.

To remove a note or range/bearing, click the sidebar item and select delete. All notes and range/bearings can be removed by selecting Delete all Notes from the Display menu.

Edit Waypoints

Allows modifying, deleting or adding waypoints.

To Delete a Waypoint, select the waypoint from the list and press Delete. You can't delete a waypoint if it's in use by any course on file.

To create a new waypoint

1. Press New, and type in the appropriate name.
2. Proceed to Modify a waypoint, step 2.
3. You can also click on the chart to place a waypoint by eye, then proceed below to adjust the waypoint.

To Modify a waypoint

1. Select the waypoint from the list and press Modify. You can't change any waypoint in the course in use.
2. Select the Type; Fixed, Floater or Origin.
- 3a. For Fixed and Origin types, enter the Latitude and Longitude or press Here.
- 3b. For Floater types, enter the Range and bearing, and whether it's referenced from the course origin (the Origin Mark), or the previous mark. If you want the range to scale when the course is selected, select Scale Range. If you want the bearing to turn with the course orientation, select Rel W/Leg.
4. Press the Icon box to select the desired graphic.
5. Press Save.

Display

Turns your screen, or a portion of it, into Ockam displays; typically one would view 4 or

OS4 Display #1			
6.70	212	11.7	6.41
Boatspeed	Wind Dir.	WindspdTrue	Target 037

6 functions, but you can have up to 16 if you wish.

Changing an item Click on the desired item, select the new function and press OK.

Adding an item Click on the desired item, select the new function and press Add. The new pane goes where you originally clicked, and the rest are moved down/right.

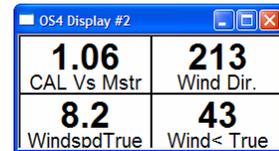
Moving an item Click on the desired item, change the Position number and press Move.

Deleting an item Click on the desired item and press Delete.

Closing the display Press the close box (X) in the upper right corner.

Adding a display Click on any item and press New. Then change the location and size to suit.

See [Registering OS4 components](#) for how to enable Display.

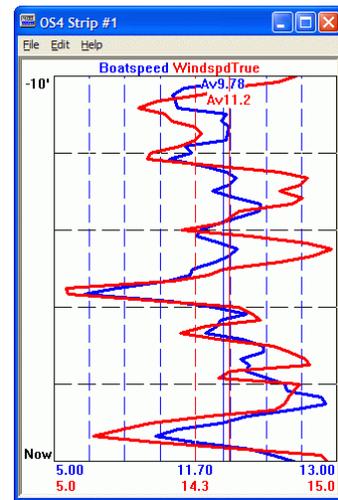


Stripchart

The Stripchart Application displays up to 6 pages, each containing between 1 and 4 stripcharts. Each page has a common time base between 10 minutes and 3 hours in length, and selectable variables showing minimum, maximum and average values.

To change the contents of a stripchart page;

1. Press Prev or Next to find the desired page.
2. To add a strip to the page, select the desired function from the list and press Add in the Strip group.
3. To delete a strip, select the strip from the Chrt # list and press Delete in the Strip group.
4. To change the function of a strip, select the strip from the Chrt # list, then select the new function from the function list.
5. To change the foreground color of a strip, select the strip from the Chrt # list and press the color button.



You edit a copy of the entire stripchart setup (pages, strips and their associated functions). Pressing OK copies the edit setup to the stripchart window, while Cancel just returns.

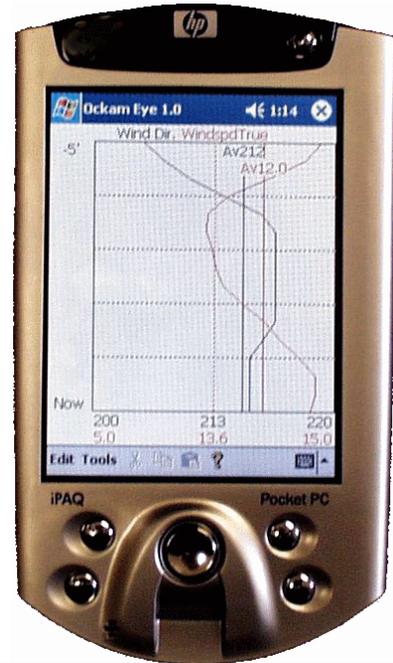
See [Registering OS4 components](#) for how to enable Stripchart.

Eye

The Ockam Eye system enables PDAs to affordably and wirelessly display and control your instrument system from the rail. The Eye PDA application

- Provides up to 20 pages of numeric or graphical information. Each page can contain up to 8 numeric or 4 graphical items.
- Full instrument control is available.
- Designed for finger-only operation. Setup and some system control functions involving keyboard input may require the stylus.
- Any number of PDAs can be used with the Eye system, but each PDA requires a separate unlock code.

The Eye is compatible with all Ockam instrument systems.



Theory of operation

The Eye system consists of 2 software components, designed to work with 4 major pieces of user-supplied hardware.

- A source of instrument data. This is provided by the Tryad T1 processor, an 050 RS-232 interface attached to an 001-based Ockam system, or another system supplying NMEA-0183 attached to the [NMEAxt application](#).
- A Laptop or PC with serial and Ethernet ports, and running Windows XP, and the **OckamSoft 4 EtherServer component**. In addition to providing Ockam services on the PC, the server converts between serial data and Ethernet packets, thereby connecting the wireless PDA to the instrument system.
- A wireless Cable/DSL router. This device performs two functions. The radio connects the Ethernet (wired LAN) to the wireless devices, and the internal software provides configuration information (DHCP) to all attached devices (wired and wireless).
- A Pocket-PC PDA with wireless LAN, running the **Eye software component**.

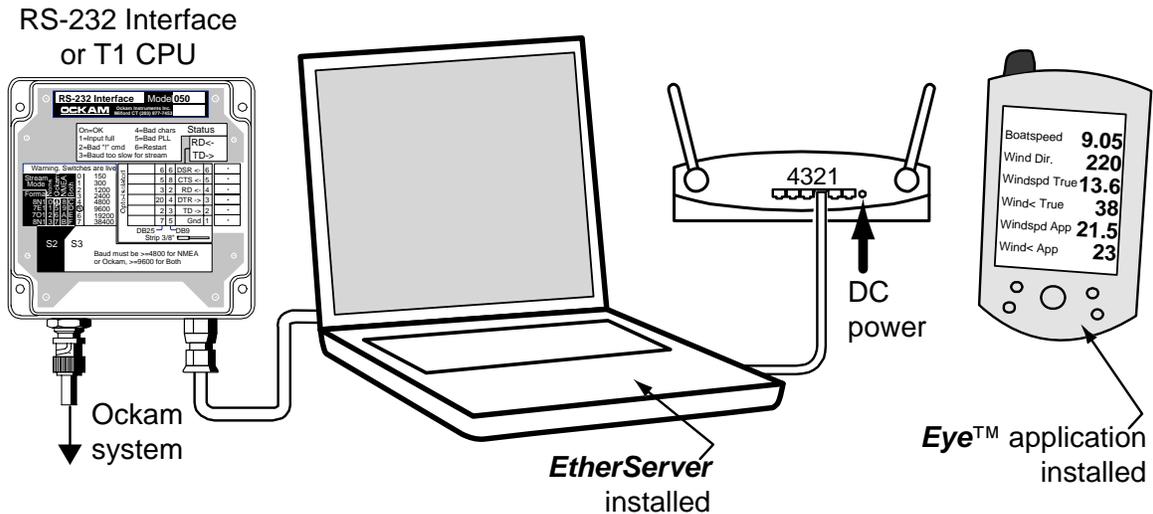
Instrument data moves from the instrument system into the serial port on the PC, where the **EtherServer** converts it to UDP packets and broadcasts them over the Ethernet connection to port 5005 (or as set). The router launches these packets over the radio to the PDA. Thus, any device connected to either the wire or the radio, and configured to receive UDP broadcast on port 5005, will receive Ockam data.

If the PDA wants to send something to the instrument system, it sends a UDP packet to the PC IP address, port 5006 (or as set+1). The **EtherServer** converts these packets to serial form and forwards them to the instrument system.

Installation

This system relies on several components not under Ockam's control. In addition, wireless LAN technology is young, and experts are rare.

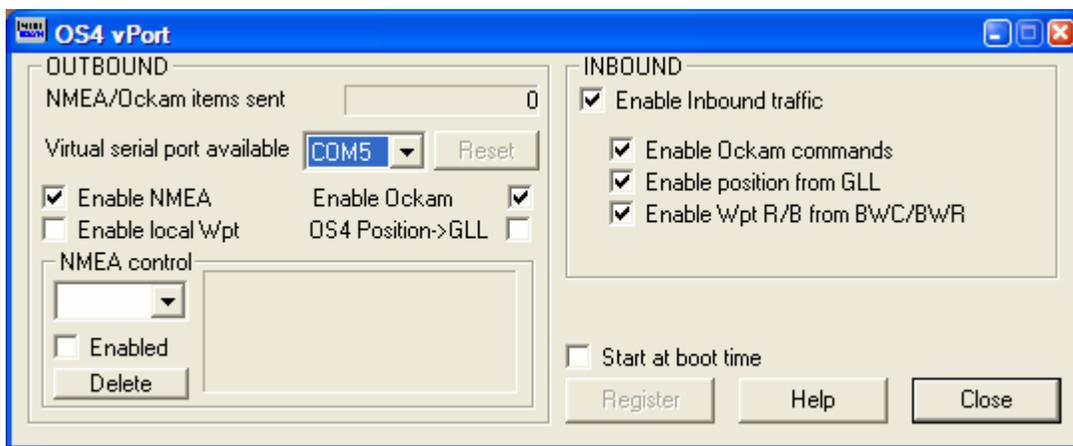
- 1 Be sure your laptop/PC operates correctly with an Ethernet LAN using TCP/IP. It should be set up to use DHCP to obtain an IP address automatically. If you are unsure, you should take your PC and your DSL router to your dealer and have him configure them for you.
- 2 Install the PDA support on the laptop, including ActiveSync. These functions allow you to load the Eye software.
- 3 Connect the components as shown. The PC should be connected to the router's local side (usually numbered), not the "WAN" or the "Uplink" connectors. Install the **OckamSoft 4 EtherServer** on the Laptop/PC.



- 4 Follow the manufacturer's instructions for configuring the DSL router. Note the following:
 - WAN connection type should be DHCP (Obtain an IP automatically).
 - The radio should be enabled.
 - Set the SSID to a unique string, say your boat name. Enable "SSID Broadcast" until the system is running well, and then disable it.
 - Don't enable WEP security until everything is working well.
- 5 Configure your PDA's WLAN.
 - Mode should be "Infrastructure" vs. "Ad-Hoc". This means "talk to the router instead of each other".
 - Set the SSID to the same string as the router (see above).
 - WLAN enabled (usually confirmed by an LED being on).
 - WEP security disabled (see above).
- 6 Install the **Eye software component** on the PDA.
- 7 Start instrument data flowing, and confirm its arrival on the PDA.
 1. On the PC, start the driver. If no shortcut has been provided, double-click OS4DRV.EXE located in the windows directory. A small icon should appear in the "tray", the area in the lower-right where the clock is.

2. Click the tray icon and select "Driver...", then turn the instruments on. On the "Status" tab, the "Frames received" number should count up. If not, select the "Comm port" tab, and then the correct COM port (determined by where the instruments are plugged in), and baud rate etc. (determined by the settings of the RS232 interface).
 3. If you don't have access to instruments, you can run the driver's simulator in order to provide data for the Eye setup, but eventually, you will have to do step 2 to configure the driver for your instruments.
 4. Once the Status tab shows data arriving OK, click the "Variables" tab, and confirm that data is ungarbled (i.e. Boatspeed shows "0.00" etc).
 5. On the "Comm port" tab, check "Enable Ockam data on Ethernet".
 6. On the PDA, confirm the WLAN is up (usually some LED is on or flashing), then run the Eye application. You should be able to see instrument data.
- 8 How to register the **Eye software component**.
1. You will need the PDA owner's name, the boat name the PDA make, model and serial number from the label under the battery (you should write these down ahead of time), two items from the Eye program, and a valid credit card.
 2. Call Ockam (203-877-7453) with your PDA at the ready. After the other information is recorded, you will be asked to start Eye, select Help>Register and read off the Program Rev (a number) and the PDA ID code (an 4-4 character string). You will then receive a 6-character unlock code back.
 3. Enter the registration code in the space provided, and press the OK button. If all went well, you should get a dialog box saying "Unlock code accepted. Please restart the program."

vPort



The Ockam **vPort** virtual serial port application works in conjunction with the OckamSoft 4 driver to supply NMEA and/or Ockam data to a program which would normally be expecting direct, dedicated hardware connection to a NMEA data source (e.g. the NMEA output from a GPS).

- It allows OckamSoft-aware programs to co-exist with a NMEA program without requiring multiple serial ports or bizarre splitter-cable wiring hacks. Such hacks are against spec, reduce communication reliability to both applications, and are never documented, so cannot be maintained.

- The NMEA output stream includes boat-oriented data (Ockam data formed into NMEA sentences) such as depth and wind to be delivered to the NMEA application in addition to whatever the GPS is providing. This eliminates the need for NMEA “combiner boxes”. You can also enable a local version of BWC based on the instrument system’s waypoint information.
- It provides control over which sentence types will be delivered to the NMEA application. This allows disabling redundant data sources, preventing the NMEA application from hopping and dithering.
- It lets you to monitor individual NMEA sentence data for troubleshooting purposes.

Note: vPort requires Windows XP/2000 (it won’t work on windows 9x or ME) and NMEA data. For the instrument system, that means:

- A Tryad system OR
- A classic system with 041 GPS interface and grey RS232 interface rev. D or later OR
- A system inputting data thru the NMEAxt application.

Theory of operation

A REAL serial port is a combination of hardware (plugs, wires and ICs) and a software driver that lets a program running in a PC communicate with other boxes; say a GPS or an instrument system. Real serial ports are becoming rarer on laptops due to space constraints and cost (and standardization issues as well), so there is a turf war going on amongst applications that used to have lots of easy (well, maybe possible) connections between themselves and their external data.

A VIRTUAL serial port is also a software driver that looks exactly like a real serial port, but which is not actually attached to any real hardware. Programs can open and close a virtual serial port just like a real one, but the data which comes out of the port is already inside the PC, or comes in via some other type of connection. In the case of **vPort**, that data source is the data stream coming in a real port connected to an instrument system.

A qualifying Ockam instrument system (see above) can be set to include both Ockam and NMEA data, including GPS output (see the 050 RS232 and T1 CPU documentation, “!S” command). The OS4 driver splits these two streams into separate databases – Ockam and NMEA. **vPort** can send either the NMEA or Ockam stream (or both) to a virtual serial port, allowing an application to operate as if it were attached to the real serial port but without the need for a second physical connection.

Installation

Because virtual serial ports are only software, they don’t exist when that software isn’t running. The main issue in setting up **vPort** is having the virtual serial port available and primed with data when the target application runs. We’re going to specify a procedure which runs **vPort** when the computer starts, thus providing the virtual port at all times.

You will be using a Windows utility called HyperTerminal to troubleshoot the various serial ports. A How-To for HyperTerminal is included below.

- 1 Install the **vPort** software. Don’t run it yet.
 - a By default, the following files are installed in c:\Program Files\OckamSoft 4\vPort:
 - VPort.exe The main **vPort** program
 - ResetBus.exe Stand-alone version of the **vPort** reset button.
 - Vsb.inf Info file for installation of the virtual serial bus driver.
 - Vsb.sys Virtual serial bus driver.
 - Vsbsetup.exe Installer for virtual serial bus driver.
 - Vserial.inf Info file for installation of the port driver.

- Vserial.sys Virtual serial port driver.
- VSPort.ocx Virtual serial port ActiveX control.

b Shortcuts to VPort.exe are placed in the Startup folder (to automatically start **vPort** when the computer boots: see [Operation](#) below for why), OckamSoft 4 group, and the desktop.

2 Establish the REAL port and settings on which the instruments are communicating.

a If you're using a USB serial port, be sure it's connected. Also be sure your instruments are connected to the serial connector and turned on.

Ensure that the OckamSoft driver is NOT running. Look in the tray (area lower right where the clock shows) for the OckamSoft  icon. Be sure to press that little (<) button to look in the hidey place. If it's there, click and [Exit](#).

b Start HyperTerminal (see below), and find the instrument data stream. Note that Ockam data is single letters (e.g. 'B' for boatspeed) followed by a numeric field (e.g. '5.88').

```
0M06.64B5.88V4.2b5.16U148f-4.93P6.07y2.2Y-0.3%36.8,
1B5.85X'33.697820X-118.238097r'1.84y2.2Y-0.2#7.7,
2B5.84b5.17F'0.410217p7.33:24:6.0y2.2Y-0.2%36.8,
```

Note the instrument port settings (e.g. COM5, 9600,8,N,1).

c Confirm that the connection is two-way. Press Enter a couple of times, then type **U0=aaaaaaaaaaaaaaaa** and Enter. You should see the user string amongst the Ockam data

```
0M06.64B5.88V4.2b5.16U148f-4.93P6.07y2.2Y-0.3%36.8,
1B5.85X'33.697820X-118.238097r'1.84y2.2Y-0.2#7.70aaaaaaaaaaaaaaaa,
2B5.84b5.17F'0.410217p7.33:24:6.0y2.2Y-0.2%36.8,
```

3 Check that NMEA data stream is available.

a Check that your GPS is on and working.

b Type **!S2** and press Enter. This disables Ockam and enables NMEA data. You should be seeing NMEA sentences. Note that NMEA sentences always start with '\$', then 5 letters and a comma (e.g. '\$GPGGA,') , then several fields separated by commas.

```
$GPGGA,194056,4000.000,N,05000.000,W,0,0,00,+0050,M,-034,M,,0000
$GPRMC,194057,V,4000.00,N,05000.00,W,000.0,000.,100703,,*22
$GPGLL,4000.00,N,05000.00,W
$GPVTG,000.0,T,,000.0,N,,
```

c If you're not getting anything, try **!S2** a couple of more times. If nothing happens, either the GPS is not outputting, or the GPS interface is disabled.

If the processor is a Tryad T1, lack of NMEA data indicates the GPS is not outputting. Check the GPS light on the status panel.

If the processor is 001, you must enable the 041 GPS interface to output to the NMEA channel by setting (see the system manual, section 5.xx).

4 Set the instrument system to deliver the combined Ockam and NMEA data stream.

a Type **!S3** and press Enter. You should be seeing NMEA sentences intermixed with Ockam data.

```

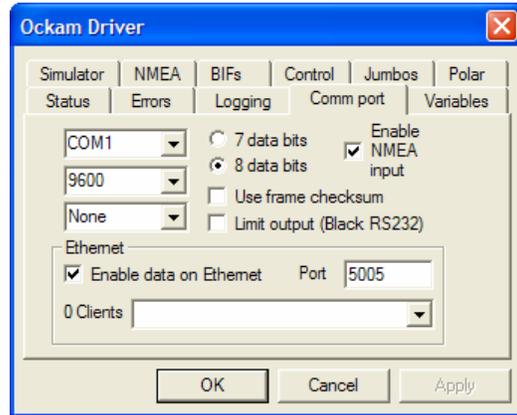
0M06.64B5.88V4.2b5.16U148f-4.93$GPGGA,194056,4000.000,
N,05000.000,W,0,0,00,+0050,M,-034,M,,0000P6.07Y2.2Y-0.3
%36.8,
1B5.85X'33.697820X-118.238097$GPRMC,194057,V,4000.00,N,
05000.00,W,000.0,000.,100703,,*22r'1.84Y2.2Y-0.2#7.7,
2B5.84b5.17F'0.410217p7.33:24:6.0$GPGLL,4000.00,N,05000.00,
W Y2.2Y-0.2%36.8,

```

- b If you haven't yet saved the HyperTerminal session, do so now (say as 'Ockam.ht'). Then close the connection (Call Disconnect). Don't quit HyperTerminal: you will be using it again later.
- 5 Run the OckamSoft 4 driver and establish a connection with the instruments.

- a Installation should have put an OckamSoft 4 group in the All Programs section of your Start menu. Select the Driver link, then find the OS4 icon in the tray (see step 2a above), click and select Driver.

Select the Comm port tab and check that the settings are the same as those established in step 2b. Only check Use frame checksum if you know you need it, and only check Limit output if your RS232 interface is black. Also be sure the Enable NMEA input checkbox is checked. The Ethernet settings are used by the Eye application.



- b Check that data is coming in (Status tab, Frames received counting up).
- c Check that NMEA data is coming in (NMEA tab, press Recent and the most recent sentences should show).

6 Run **vPort** and set it up.

- a Select the Run vPort link from Start menu/All Programs/OckamSoft 4 group.
- b Check the list of NMEA sentence types. The value window should show the current value for each NMEA sentence.
- c Check the range of ports that can be selected in your NMEA application. Don't open any port yet. Ports COM1 to COM4 are always selectable, but you might check to see if the application can go to COM8 or even COM16.
- d Pick an appropriate port from the Virtual serial port droplist. Note that the missing COM ports are real ones, and therefore not available to virtual ports.
- e Bring up HyperTerminal (it should be disconnected). File, Properties, set Connect Using to the port selected in (d) and OK (because there is no hardware, the port settings aren't important). You should be getting NMEA data.
- f Disconnect and save the session as e.g. Vport5.ht. Close HyperTerminal.
- g Start your NMEA application and open the port set in (d). The application should now be receiving NMEA data. This completes the setup.

7 To register **vPort**.

- a If there is no Register button, **vPort** is already registered.
- b Press the Register button. Note the VPort rev and Uplink code.
- c Call Ockam at (203)877-7453 to obtain an Unlock code.

- d Enter the unlock code in the text box and press OK.
- e If registration was successful, you will be asked to restart vPort.

Operation

The screen shot shows that vPort is making virtual port COM5 which the target application has opened (In use), NMEA sentence type 'RMB' is enabled, and so far, 190 items have been transferred. And, by the way, the program is operating as a demo, and after 5 minutes, data will stop flowing. After you register, data is not stanchied.

Because its virtual serial port only exists while it runs, you must start vPort BEFORE you start your target application, so the port will be there when the application tries to open it. Similarly, you can't close vPort before closing the application, because that would "pull the code out from under" the serial port which the application has open.

Enabling vPort to start when you boot your computer:

1. Place a link to vPort in your Startup program group.
 - a. Right-click the Start button, Properties, Start Menu tab. If not selected, select Classic Start menu. Press the Customize button, then the Add... button.
 - b. Create Shortcut: Press Browse... and navigate to vPort.exe (by default, My Computer\C:\Program Files\OckamSoft 4\vPort\vport.exe) OK.
 - c. Modify the location of the item by appending " boot" (press the End key or right arrow to place the cursor after the ending quote, then type <space>boot.) Press Next.
 - d. Select Program Folder: Place the link in Start Menu\Programs\Startup. Press Next, then Finish.
 - e. If you changed from Start Menu to Classic Start menu in step (a), re-select Start Menu. Press OK.
2. Start vPort and check Start at boot time.
 - a. Run vPort (click the Start button, OckamSoft 4, vPort).
 - b. Check Start at boot time.

To disable vPort from starting at boot time, uncheck Start at boot time before pressing Close.

vPort Controls

NMEA/Ockam items sent

Troubleshooting aid. The number increments when a data item passes through to the target application. Virtual serial port must be (In use), and at least 1 item type (NMEA, Ockam or Local Wpt) must be enabled.

Virtual serial port (Ready)

No application is using the indicated virtual serial port. You can change the serial port over which data will be sent to the application, and you can close vPort.

Virtual serial port (In use)

Some application is using the indicated virtual serial port. Until the port is closed, you can't change the port or exit vPort.

Reset button (only enabled when Virtual serial port is <none>)

Used to recover hanging virtual ports. See Troubleshooting – Resetting virtual ports below.

NMEA control group

NMEA type droplist [RMB]

Selects which NMEA sentence type will be shown in the adjacent text area and Enabled checkbox.

Enabled checkbox

Controls whether or not the NMEA sentence type will be passed on to the application.

Delete button

Since vPort remembers all NMEA types it has encountered, it's possible that some of the types in the droplist are no longer being sourced. If this is the case, the text area will not show data. If you're pretty sure the type is obsolete, press the Delete button to remove that type from the droplist. This is not dangerous, because if the type is being currently provided, it will be immediately replaced in the list.

Enable NMEA checkbox

Controls whether any enabled (see above) NMEA sentences will be passed to the target application.

Enable Ockam checkbox

Controls whether Ockam data will be passed to the target application.

Start at boot time checkbox

Controls whether **vPort** starts automatically when the computer boots up (recommended).

Enable local Wpt checkbox

When checked, a local BWC sentence is generated from instrument system tag 'R' (waypoint range & bearing) every 5 seconds. This 'local Wpt' sentence is passed regardless of the state of the 'Enable NMEA' checkbox. In fact, to prevent conflicts, you should disable the NMEA BWC sentence when using 'local Wpt'.

Register button (Disabled after **vPort** is successfully registered)

See [Installation](#) for proper use.

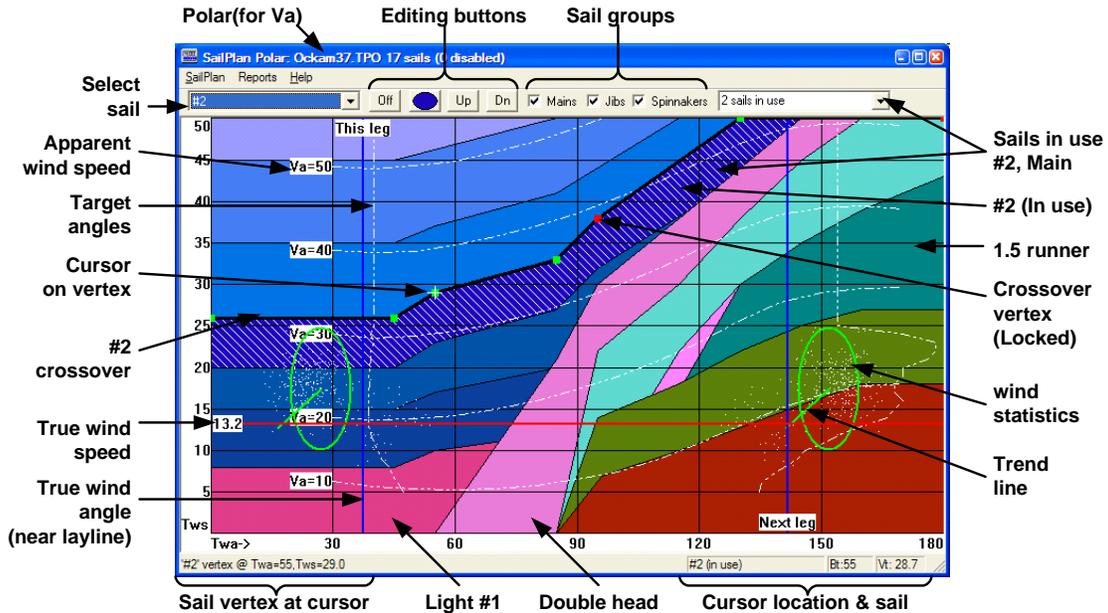
Troubleshooting – resetting virtual ports

You may get a message from your NMEA application complaining that it can't open the virtual port. When you bring up **vPort**, you notice that the Virtual serial port shows <none>, and the normal port doesn't show in the droplist. This can be caused by improperly shutting down the system, leaving a virtual port open.

To recover (reset) all virtual ports:

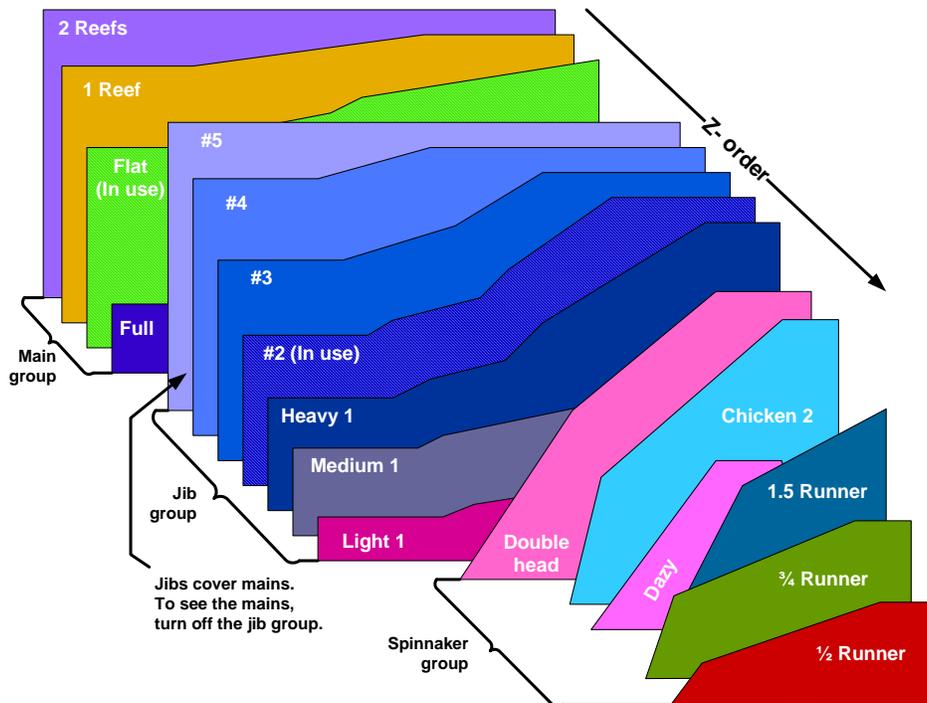
- 1 Close the NMEA application.
- 2 Set the **vPort** Virtual serial port droplist to <none>.
- 3 Press the Reset button (all hanging virtual ports will be closed, and the droplist will be reloaded).
- 4 Set the Virtual serial port droplist to the port normally used by the NMEA application.
- 5 Restart your NMEA application.

SailPlan



The *SailPlan* application works in conjunction with the OckamSoft 4 driver and Racecourse to display sail crossover information, current and next-leg true wind conditions, apparent wind, targets and wind statistics.

Theory



Each sail shape is drawn on a true wind surface (Speed vs. Angle), the shape describing the conditions under which that sail should (or could) be used. Each sail has an upper wind speed and range of angles beyond which it is either inefficient or would be damaged. The #5 jib is usable up

to 50 knots true, and all wind angles. If this were the only headsail you had, SailPlan would just be a blue rectangle. However, the #3 is a better choice upwind to 30 knots, increasing to 50 knots at 135 degrees. So placing the #3 above the #5 in the Z-order exposes the #5 only in the range where it would be the choice vs. the #3. Similarly, the other sails in the inventory are positioned correctly such that in those conditions where it is the sail of choice, it has a visible area.

Installation

SailPlan is a registered application (see [Registration](#)).

When you first run SailPlan, you will be asked to load a sample sail plan. You'll get something like the picture above. You can modify the sample plan by deleting those sails which are not in your inventory and edit the remaining sails as needed. Then save the file (SailPlan, [Save](#)) and it will be opened automatically when SailPlan restarts.

Rhumblines and true wind angles and wind statistical information come from the [Racecourse](#) and [Driver](#) respectively. If you aren't hooked up to an instrument system, you can turn on the simulator (in the driver) to provide wind, and the racecourse to provide rhumblines.

Operation

Status bar

The status bar (along the bottom) displays information about the current location of the cursor. To the right are the true wind coordinates and sail name.

On the left,

- By default, the 'Lead' information which can be entered by editing the sail.
- If over a sail vertex, the coordinates of that vertex.
- If dragging, the current location of the cursor.

Visibility

Some sails are completely or partially hidden by others higher in the Z-order – e.g. mains are completely covered by jibs and spinnakers, while spinnakers cover jibs where it makes sense to use them. You can:

- Hide or show sail types with the checkboxes on the dialog bar (sails of type [Other](#) can't be disabled).
- Disable individual sails by right-clicking and selecting [Disable](#), or by left-clicking on the sail to select it and using the 'Off' button. Re-enable an individual sail by selecting it from the left droplist, or right-click anywhere on the sail plan and select [Enable All](#).
- Select the sail using the sail droplist on the left of the dialog bar. Even if it's way down in the Z-order, its vertexes become visible.
- Move a selected sail forward or backward in the Z-order with the 'Up' and 'Dn' buttons. Changing the Z-order just to see a sail is not recommended, because the change is permanent (if you [Save](#) your sail plan).

True wind speed, This leg and Next leg

When the required information is available (true wind speed and racecourse data), the current wind conditions for this leg (the true wind angle of the rhumbline from the boat to the

next mark), and next leg (true wind angle of the rumblines of the next leg are displayed. Two things change these lines: where you are on the current leg (NOT your current true wind angle), and the value of Wind Direction. Current true wind speed is shown as a horizontal red line. If conditions don't change, the indicated wind speed would also be experienced on the next leg.

Targets and Apparent wind speed

When a polar is available, apparent wind speed and up- and downwind targets can be displayed. Turn these features on and off in the SailPlan menu.

Wind statistics

When wind and racecourse information are available, you can display a scatter plot of the last hour's wind readings for both legs. Racecourse information is required because the true wind angle dimension is course-related. An oval is drawn around the dots denoting the RMS value of the scatter, and a trend line is drawn from the mean position. Although it might be viewed as a predictor, the trend line is actually an indicator of persistent shift and strength of the wind in the previous hour.

The location of the current true wind relative to the oval indicates your current conditions relative to the wind average over the last hour.

Sails in use

Sails in use are drawn hatched. When a sail is denoted as 'in use', its timer is updated, providing hours used information. Put a sail in use by selecting it from the right droplist on the dialog bar, or by right-clicking over its shape and selecting Put in use. Using the droplist automatically 'un-uses' all other sails of the same type.

Editing the sail plan

If you change your sail plan, and you like the changes, you should save them by selecting SailPlan, Save. If you're just experimenting, or you made changes you don't like, select SailPlan, Revert to return to the previously saved state.

Adding a sail

Select SailPlan, Add. At minimum, fill in a name and sail type, and press Next. Fill in the maximum true wind speed, and lower and upper true wind angles, then press Finish. A black rectangle will be created at the top of the Z-order. Then, edit the vertexes as described below, change the color with the color button, and push the sail down in the Z-order with 'Dn'.

Then you can use SailPlan, Edit to include other information about the sail.

Modifying a sail

Dialog-based editing

To change everything about the sail but the name, select it and choose SailPlan, Edit. Here you can change the type, add remarks and to-do notations, and more. However, this is not the preferred way to change the sail's shape.

Graphical editing

To change the shape of the sail only, enable dragging (SailPlan, Enable Dragging). Then you can drag the vertexes (the 'corners' of the shape) graphically. Select the sail, then

move the corners where you want them. To change only wind speed, hold down the Shift key. To change only true wind angle, hold down the Ctrl key. The current vertex coordinates are shown in the status bar.

If you want to add another vertex, right click on an adjoining vertex and select Split Right or Split Left. A vertex will be added mid-way. Then drag that vertex to the desired location.

To delete an extraneous vertex, right-click and select Delete Breakpoint. The minimum number of vertexes is 2.

Vertexes can be 'locked' to prevent them from being moved. Right-click on a vertex and select 'Lock breakpoint'.

Deleting a sail

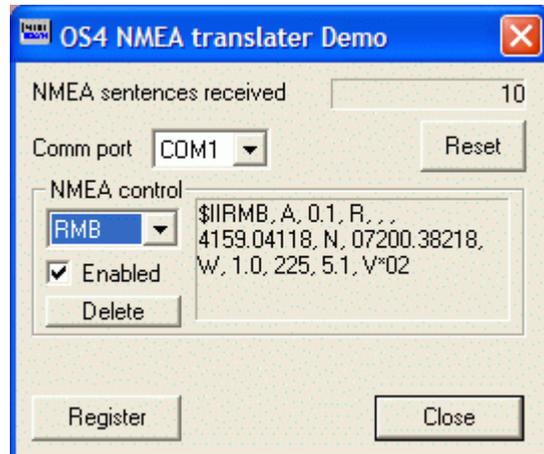
Select the sail and select menu SailPlan, Delete. There is no undo other than Revert.

Editing in a spreadsheet

SailPlan0.xls includes code to exchange data with the registry. Read the 'Instructions' tab for details.

NMEA Translator

The Ockam ***NMEAxit*** application takes a NMEA-0183 input from any instrument system and converts it into Ockam data to feed the OckamSoft 4 driver. Accepted NMEA-0183 sentence types are BWC, BWR, HDG, MMB, MTA, MTW, MWD, MWV, RMB, RMC, VDR, VHW, VPW and VTG. Since there can be conflicts amongst these sentences, NMEAxit allows you to disable sentences as needed.

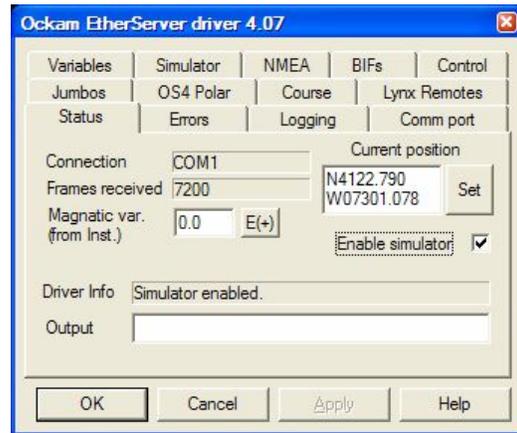


OS4 EtherServer Driver

The Ockam driver provides instrument related services to OckamSoft and other applications needing instrument data. Services include buffered input and adjustable history, variable definition, buffered NMEA data and data logging. The driver connects to the instrument system via Windows' standard COM driver.

The OS4 driver

- Simplifies the process of working with Ockam system data, including NMEA data.
- Manages control of the Ockam system across multiple client applications.
- Includes BIF (built-in function) library. Calculates and outputs special functions like course to steer for best VMC, Wally, and Next Leg Apparent that are calculated in OckamSoft.
- Provides polar services to all client applications. Includes optimum speed, tacking angle and the Wally. The server (Polar.dll) is open-source to allow VPP services to include extra functionality.
- Automatic or manual logging to disk.
- New with 4.07, an API for remote control of software. This was introduced to allow the Lynx wireless remote controller to command Racecourse and Logging functions.
- A built-in simulator provides fake data for testing and training.



The driver consists of two components: OS4Dll.dll, the server library, and OS4Drv.exe, the companion application that provides the connection to the serial port, and a modeless dialog that provides manual control of the driver functions. These two components are installed in the windows directory. Companion libraries POLAR.dll, and OS4BIF.dll, although not technically part of the driver are also installed in the windows directory.

Logging Data

In OckamSoft 4, logging is performed by the Driver, which is available whenever any component is running (look for the OckamSoft Driver icon at the bottom right of your screen. Log files are binary fixed-length format and are named mmddhmm.OSL (month, day, hour and minute of the starting time) and are logged to your \OckamSoft 4 directory.

There are two types of log records; Main and User. The Main record is logged at a time rate you specify (every so-many seconds), and the User record is logged once per so-many Main records (User records are intended for items which don't have to be logged as often as Main record items, although a Per of 1 logs a User record with each Main).

The Main log record contains 9 fixed items: Time, Position, Boatspeed, Heading, Heel, True Wind Speed, Wind Direction, Apparent Wind Speed and Angle. Two additional items can be user defined. The User log record has room for up to 13 additional items you can define.

Comment records can also be added by typing into the Comment edit of the main dialog of the Driver.

Variable definitions (VarDats), calibration values and active error codes are also logged into the header section of log files at start time.

To start logging:

1. Start the driver (Start, OckamSoft 4, Driver), then double-click the icon to see the tabbed dialog. Select the Logging tab.
2. If you haven't yet set up for logging, press the Setup button.
 - a. Add items to the Main/User-defined variables by selecting the item from the dropdown list and pressing Add or delete items by selecting it in the variables list and pressing Delete.
 - b. Enter the number of seconds in the Main Rate edit. (The items in the Main/Automatic Variables and Main/User-defined variables lists will be logged every Main/Rate seconds).
 - c. Repeat for the User group. Enter the number of Mains per User in the Per edit (e.g. if the Main Rate is 10 (seconds) and the User Per is set to 3, the User group will be logged once every 30 seconds).
 - d. If you were logging when you entered setup, the Restart Log on exit will be checked. If this item is checked, the previous log (if any) is stopped and a new one is started immediately when you press OK.
 - e. If you want to log automatically, you can check the Start log when driver loads item. This enables logging as soon as the driver loads.
3. Click on the Logging checkbox to start and stop logging.

Unlogging

To convert from OSL files to usable output, run the Delog application (in the OS4 program group). This application allows you to select from the logged information and output it to an Excel spreadsheet (or in text form (CSV file) for other purposes).

By the way, DELOG can access the current OSL file while it is being logged. This allows you to create output (graphs etc.) in near real-time.

To create a spreadsheet:

1. In the File Information group, select the desired file. It will automatically load and be scanned for comments. The Reload button reloads the selected file (used when the current file is being delogged).
2. Select the desired log items by moving them from the File Information list box to the export variables list box (>sel inserts the variable at the export selection while >end appends the variable).
3. You can review the comments (if any) in the Comments group by pressing < and >. St sets the time of the current comment to the Export Start time control.
4. Set the desired start and length parameters.
5. Select column headings (Names are like "Boatspeed" while Symbols are like "Vs").
6. Select the type of output; Excel creates an Excel4 spreadsheet while CSV creates a "Comma Separated Variable" text file.
7. Press Export and specify the filename.

Built-in Functions

The Instrument Control and Racecourse applications can display data on the instruments. Functions include

- BIF 1 Polar Speed or Time to Laylines.
- BIF 2 Target Speed or Target Speed+Angle (alternating).
- BIF 3 Target Angle or Target Speed Upwind, Angle Downwind.
- BIF 4 Wally Delta Speed.
- BIF 5 Vmc Course or Course to Steer.
- BIF 6 Downwind Courses or Next Leg Course.
- BIF 7 Next Leg Apparent Wind.
- BIF 8 Earth True Wind or Wally Average Wind Direction.
- BIF 9 Cross Track Error.

Polar

This group controls the Polar Server (see below). The polar title and description are given in the first two text boxes. Pressing Select brings up the server's Open dialog, allowing you to switch to another polar database. The Cfg list shows the available configurations of the current data base (e.g. base, NoSpin, etc.). To create a new configuration or edit an existing one, press New and fill out the configuration dialog.

Instrument control

Allows setting of calibrations, options and resets of the instrument system. See below for lists of these functions. See also Instrument Commands.

Magnum Group Set

This group allows you to set all Magnum displays to a given configuration. Select the desired configuration from the list and press Send. To return all Magna to their switch settings, press Default. If you want to change an existing configuration or add a new one, press Edit. (See also Display Remote control).

Magnum Set

This group allows you to change an individual Magnum display. Select the desired Magnum from the first list and the desired function from the second. Press Send to change the display to the selected function. You can change the display text line by typing in the text and pressing Text. If you want the text to stay on the magnum through changes in function, check Keep Text... To add, edit or delete a magnum, press Edit.

Remote control API

The driver now includes an API to allow remote control of software via the Ockam bus. Racecourse uses remote #1 and Logging uses remote #2. There are 14 other slots available for 3rd party use.

The API traps Ockam frames like "@On..." and stores the command for access by OS4-friendly applications. See the driver header file for details.

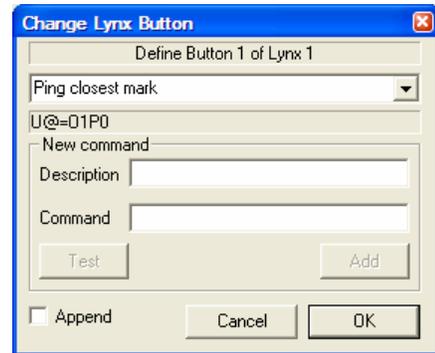
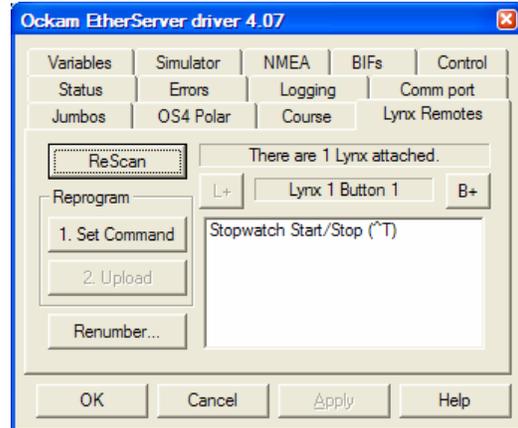
Command	Description
U@=O1P0	Racecourse; Pings the closest mark.
U@=O1P1	Racecourse; Pings the course origin (pin or committee boat).
U@=O1P2	Racecourse; Pings the starting line mark.

U@=O1N	Racecourse; Switch to the next leg.
U@=O2L1	Logger; Start logging,
U@=O2L0	Logger; Stop logging,
U@=O2C<comment>	Logger; Place <comment> in the log file,

Lynx reprogramming

This tab is used to reprogram the Lynx wireless remote receiver.

1. Open the OckamSoft 4 driver and select the Lynx Remotes tab.
2. If it says “There are no Lynx attached”, check that the lynx receiver is attached to the Ockam bus. Then press the ReScan button and wait for the receiver to be detected.
3. Use the B+ button to review the button assignments. If more than one Lynx is attached, use the L+ button to select the Lynx.
4. To reprogram a button, press Set Command. Pick the desired command from the droplist, and press OK.
5. If you don't find what you want, fill in the Ockam command and a description. Press Test to confirm the command does what you expect, then Add to the droplist. Select your newly minted command from the droplist and press OK.
6. The Lynx dialog shows your new definition, and the Upload button becomes active, indicating that the Lynx button definitions have changed.
7. If you want to stack more than one command on a button, check Append before pressing OK.



Direct command

To send commands to the instrument system, type the command text into the Direct Command text box and press enter (see Instrument Commands).

Instrument Options

Time format	Display time as hh:mm, mm:ss or hh:mm:ss
Pol/Tgt Fmt	Display Polars & Targets as Knots, Difference or percent
Select Polr	Specify which polar in interface to use
Wind Twist	Compensate for wind shear by offsetting Wind Direction
REEF param	Modify upwash (see the Ockam Instrument manual)
FLAT param	Modify upwash
GPS/Cur Ctl	Enable/Disable instrument GPS & Current calculations
Mast Height	Enter mast height for roll rate correction

Light Level	Change the Magnum lighting intensity
Vmc/CogSog	Select Vmc or CogSog display
Vmc rhumbline	Enter rhumbline for Vmc display
Units	Set instrument units: Feet/Meters, °F/°C and InHg/Millibars
Set Current	Manually set instrument Current
Set Waypt	Manually set instrument Waypoint
SetInstTime	Set the Ockam clock

Instrument Calibrations

Boatspeed Master	Changes the boatspeed on both tacks
Boatspeed Offset	Changes the boatspeed from tack to tack
Leeway	Sets the leeway factor
A. W. Ang Offst	Changes the apparent wind angle zero
A. W. Speed	Changes the apparent wind speed
Upwash	Changes the full-scale upwash
Mag Variation	Changes the magnetic variation
Polar	Changes the Polar & Target speeds

Instrument Resets

StpwchOnOff	Starts or stops the stopwatch.
StpwchReset	Sets the stopwatch initial time or synchs to the nearest minute.
BackR/Brset	Resets the instrument Back Range & Bearing function.
TripLog Rst	Resets the instrument Trip Log function.
DLVs Reset	Resets the Distance Lost Boatspeed function.
DLVmg Reset	Resets the Distance Lost Vmg function.

Instrument Averages

Boatspeed	True wind speed and angle for Polars
Apparent Wind Speed and Angle	Polar and Target Speed
Heel Angle	Wind Direction
True Wind Speed and Angle	Layline solution
Vmg	Roll Rate
DLVs and DLVmg basis average	Heading
Wind direction	Vmc
Port & Starboard layline courses	Barometric Pressure
Boatspeed and true wind angle for Laylines	

Select one of the above functions in the Inst. Control frame, fill out the Value if necessary, and press Execute.

Polar Server

The Polar Server provides polar information (Boatspeed and angle versus true wind) and sail range data. The standard driver (POLAR.DLL) supplied with OckamSoft uses a static polar data-base that includes windweight and calibration controls. Some VPP services can supply a server that has shear, gradient, crew and configuration controls as well.

Polar Conversion

The standard Polar Server supplied with OckamSoft uses the Ockam ESP binary polar file (*.TPO). This file contains static speed and angle data derived from the Velocity Prediction Program ("VPP") which is part of the IMS rating system.

If the polar data is supplied as a worksheet (WKS or WK1 file), you can use the CVTPO utility to convert the worksheet to a TPO file. You can also use this utility to convert a TPO file to a WKS file for plotting or modification and subsequent re-conversion to TPO form.

To convert from one form to the other, execute CVTPO (located in your \OS4 directory), and:

1. Press the Browse button to select the source data. The standard windows file opening dialog appears.
2. Select the origin form (Polar worksheet or Polar binary) in the List Files of Type dropdown.
3. Select the source file and press OK.
4. CVTPO reads the source file and creates a suggested output filename of the opposite type.
5. Press the Convert button to create the output file.
6. Press Quit to end CVTPO.

Simulator

The Simulator works in conjunction with the Ockam Driver to provide simulated input to OckamSoft and any other application using the driver. The Simulator sails around and around the last saved course in use by OckamSoft.

Goodie bag

Here is where various support applications are described.

CVTPO.Exe Converts Ockam polar files between .WKS and .TPO types.

WKS files can be opened, read and modified with a spreadsheet program, and target angles can be appended with the FitVmc.Exe program.

TPO files are quick-loading versions of WKS files that are expected by OS4, Tryad and ESP software.

Delog32.Exe Converts OS4 log files (created by the driver) into the CSV format, suitable for loading into a spreadsheet.

Appendix

Using HyperTerminal

To start HyperTerminal and connect to the instrument input:

- 1 Press Start, then select in turn All Programs, Accessories, Communications, HyperTerminal (the program, not the folder). Cancel the "Connection Description – New Connection" dialog box. Then File, Open and see if there are any session files available, possibly for your instruments (named maybe Ockam). If there is, select it and proceed to step 6. If there isn't, create a session as follows:
- 2 File, New Connection. Enter Ockam, select an Icon, and OK (Connect To dialog appears).
- 3 Ignore Country, Area code and Phone number. Press Connect Using droplist and note the COMx names there. These are your REAL COM port(s), (and possibly a virtual port). Select the port you think the instruments are connected to and OK (COM Properties dialog appears).
- 4 Set Bits per Second=9600, Data Bits=8, Parity=None, Stop Bits=1, Flow Control=None (these are default values: your system may be set to some other settings: refer to the Ockam System manual RS232 interface settings) and OK.
- 5 Check that the connection is open (the phone icon with the lifted handset (#4) is enabled – or menu Call Connect is gray). You should see Ockam data stream by (numbers and letters – no smiley-faces or hieroglyphics).

```
0M06.64B5.88V4.2b5.16U148f-4.93P6.07Y2.2Y-0.3%36.8,  
1B5.85X'33.697820X-118.238097r'1.84Y2.2Y-0.2#7.7,  
2B5.84b5.17F'0.410217p7.33:24:6.0Y2.2Y-0.2%36.8,
```

- 6 If you get nothing, Call, Disconnect, then File, Properties, Connect using <some other choice>, then Call, Connect. Return to step 5.
- 7 If you get junk, return to step 4 and try other settings; some combination of Bits per Second of 9600 or 4800 and Data bits of 8 or 7 are most likely.
- 8 Once you have a good connection going, save the session. Do File Save As, and possibly rename the session.
- 9 Write the port (e.g. COM1), baud rate (e.g. 9600) and data bits (e.g. 8) down someplace for handy reference.

Example files

- DRVST.XLS Example Excel 5.0 Worksheet interface to the Driver and Polar servers. Demonstrates how to call the Driver from Excel.
- DLWPTS Example VB3 application to download waypoints from GPS (requires 050D RS-232 interface).
- NMEA Example VB3 application to play with NMEA functions of the Ockam Driver (requires 050D RS-232 interface).

List of Files

Main application files in OckamSoft 4 (or specified directory)

LynxCmds.txt	Database of Ockam commands used by the Lynx tab.
Lynx Presets.txt	The default settings for the Lynx.
NMEAxlt.exe	NMEA converter. Drives OS4 from a NMEA system.

OS4Race. exe	The racecourse application.
OS4Dspl.exe	The instrument display application.
OS4Strip. exe	The stripchart application.
OS4Help.hlp	OckamSoft 4 Help
OS4.pdf	OckamSoft 4 manual (this file).
Ockam37.tpo	Sample polar file.
OS4.rtf	Readme file..
SailPlan. exe	The SailPlan application.

Eye PDA application files in OckamSoft 4\Eye

Eye.pdf	Eye manual.
BuildBat.exe	Setup file: creates InstallEye.bat.
Eye.ico	Eye icon.
HowToEye.pdf	Installation cookbook.
Eye.ini	Eye download files (3)
Eye.PPC3_CEF.Cab	
Eye.PPC3_CEF.Dat	
InstallEye.bat	Invokes ActiveSync to download Eye to the PDA.

VPort (virtual serial port) files in OckamSoft 4\vPort

NOTE: Only compatible with Windows XP/2000.

VPort.pdf	Vport manual (loaded for all OS's).
RunVSP.exe	Setup utility
Vport.exe	Virtual serial port components (7)
Vsb.inf	
Vsb.sys	(These files will <u>not</u>
VsbSetup.exe	be installed if
Vserial.inf	the operating system
Vserial.sys	is <XP/2000)
VSPort.ocx	
ResetBus.exe	Resets orphaned virtual serial ports.

Auxiliary files in OckamSoft 4\Goodies

Delog32.exe	Converts log files into spreadsheets
CVTPO.exe	Converts polars between TPO and WKS flavors
API file	C header files for driver, polar and BIF dlls
DEMO file	Example source code

Application files added to WINDOWS (or WINNT)

OS4Dll.dll	The Ockam Driver Server library.
OS4Drv.exe	The Ockam Driver application.
OS4BIF. dll	The built-in functions library.
MAP3. dll	The chart interface library.
OS4Util. dll	The common functions library.
Polar. dll	The Polar server library.

Application files added to WINDOWS\SYSTEM32

Certifct.dll	Nadcon.dll	The MapTech chart access libraries (13 files).
Datums.dll	PICN13.dll	
Jpeg6.dll	PICN13D. dll	
KAP.dll	PICN13N. dll	
Mtlib.dll	PICN2113.dll	

MTLS.dll Proj.dll
 MTsdk.dll TIFF60mt.dll
 MTsdkN.dll

Shortcuts

In Start Menu/Programs Menu/OckamSoft 4

Convert polars	Convert polar files between WKS and TPO formats.
Delog to spreadsheet	Runs Delog32 to convert log files to spreadsheets.
Display	Starts an instance of the display app.
Download Eye to PDA	Invokes ActiveSync to download Eye to the PDA
Driver	Starts the OS4 driver (located in Windows)
MultiStart (Execute)	Runs MultiStart using presets.
MultiStart (Setup)	Runs the OS4Start allowing changes to settings.
NMEA translator	Starts the NMEA input application
OS4 Help	Opens the OS4 help file
Racecourse	Starts the racecourse app
Stripchart	Starts an instance of the stripchart app.
vPort	Starts the virtual comm port

On the Desktop

Start OS4	Runs MultiStart using presets.
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Registry entries

HKLM\Software\Ockam	Dir=C:\Program Files\OckamSoft 4 (default)
HKCU\Software\Ockam*	Settings for OS4
.OSL	File extension for OS4 log files (links to Delog32.exe)
.TPO	File extension for OS4 polar binary files (links to CVTPO.Exe)