

Ockam's NMEA distribution system

This paper describes Ockam's NMEA distribution system which has been standard on all Ockam systems since 1996, and can be retro-fitted on older systems. The purpose of this system is to increase reliability and utility and robustly distribute GPS and Ockam data to all NMEA hardware and software clients.

Hardware:

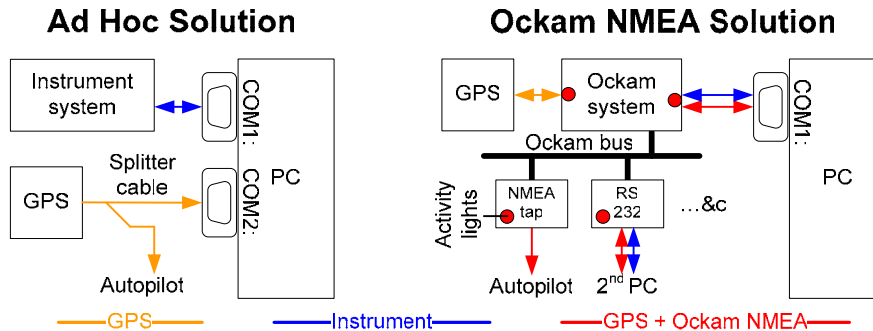


Fig. 1

Basically, the NMEA distribution system routes the GPS thru the Ockam system instead of using splitter cables or 'NMEA repeater' boxes to wire the GPS to multiple hardware clients. The advantages are:

- Fewer ports** You eliminate a second serial port on the PC. With only 1 port to manage, there are fewer setup issues (What port has which stream? Has plug-and-play moved the COM ports again?), and less can go wrong with the wiring.
- Better wiring** Splitter cables increase wiring confusion and dilute the GPS signal, increasing the likelihood of intermittent operation or total failure. If you have 3 clients, a repeater box is required in ad hoc installations.
- Troubleshooting** Using NMEA taps™ instead of splitter cables ensures full-strength NMEA signals for each hardware client. And there are activity lights on each box to aid in troubleshooting problems. You can also observe, troubleshoot and log what's coming out of the NMEA taps without rewiring.
- More data** The Ockam NMEA distribution includes, in addition to all GPS output, instrument data such as wind, speed, heading, depth and temperature cast as NMEA sentences. With ad hoc wiring, NMEA clients do not receive this extra information.
- Expandable** Need to add another hardware client? Just plug another NMEA tap into the nearest Ockam bus, and you have another copy of NMEA and Ockam data ready to wire in. With ad hoc wiring, adding another client (or troubleshooting the clients you already have) is a problem.
- Flexible** You're not limited to a single PC either. With an 050 RS232 interface, you can wire up to a second PC, say a tablet machine out in the cockpit. And it gets everything too, just like PC #1.

Software:

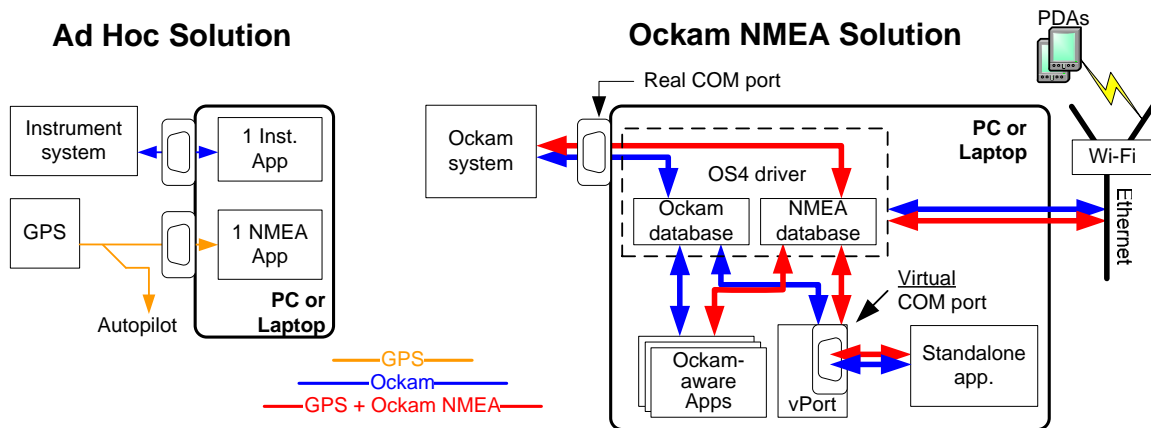


Fig. 2

Ad hoc wiring limits the number and utility of applications running on the PC. Only 1 application has access to each data stream; 1 instrument application without NMEA data, and 1 NMEA application without instrument data.

The Ockam NMEA solution in conjunction with the OckamSoft 4 driver allows multiple applications to run with access to both instrument and NMEA data. The driver also launches instrument and NMEA data onto Ethernet and Wi-Fi, enabling PDA applications and two-boat testing scenarios. This feature comes at no extra cost, and is not possible with ad hoc wiring.

vPort:

Most standalone NMEA applications expect a dedicated serial port connection to the GPS as shown in the ad hoc wiring example. OckamSoft 4 provides a solution for this problem. **vPort** is an OS4 application that creates a virtual serial port fed with Ockam and/or NMEA data from the OS4 driver.

- A REAL serial port is software and hardware (plugs, wires and chips) that lets an application communicate with another box over a physical connection.
- A VIRTUAL serial port is software only with no attachment to hardware. Data must be sourced from somewhere else in the PC, say by another port (Ethernet, other serial ports, IrDA, etc) or by software.

Programs can open and close **vPort** just like a real port, and think they have a dedicated connection to a GPS. And it's better than just a virtual GPS; the data stream can include both instrument NMEA and GPS sentences. And you can view the sentences and selectively disable conflicting items. **vPort** can also create an Ockam stream if your standalone application can use it (e.g. Expedition, MaxSea or SailMath).

With **vPort**, you can run OckamSoft 4 and a standalone application (say Nobeltec, Expedition, MaxSea or SailMath) at the same time. And the application can optionally source commands, waypoint and display data to the instrument system.

Implementation:

Tryad system:

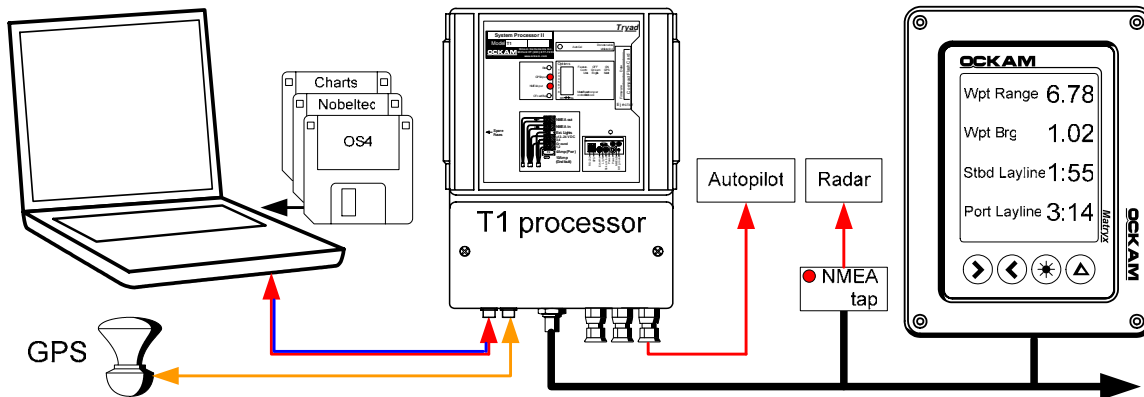


Fig. 3

The T1 processor includes everything necessary to implement the Ockam NMEA distribution, with built-in RS232, GPS and NMEA interfaces. Additional NMEA taps can be added as needed.

Classic system:

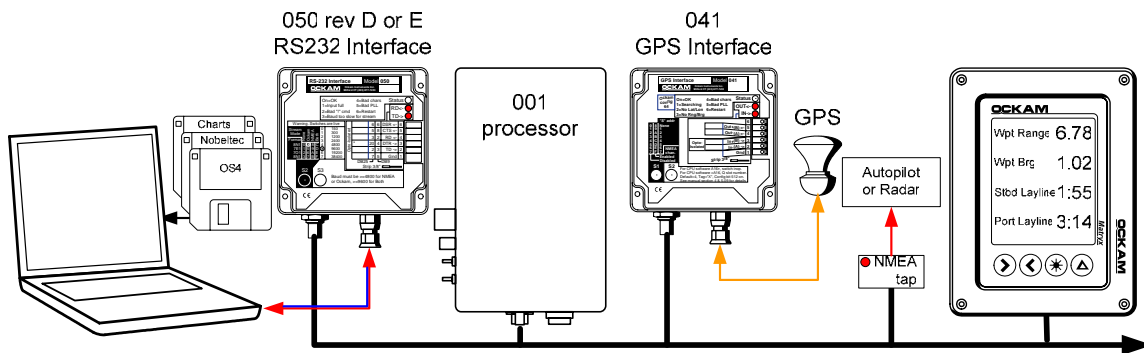


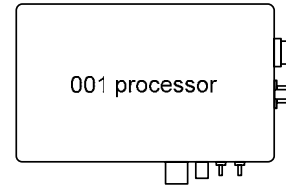
Fig. 4

The classic system using the 001 processor implements the Ockam NMEA distribution by attaching the 041 GPS interface (which sources the NMEA channel and appends Ockam data), the 050 RS232 interface (which combines Ockam and NMEA data into your PC) and NMEA taps to drive other NMEA client hardware. The RS232 interface is optional.

Upgrading:

Ockam offers trade-in allowances for your old working interfaces and processors.

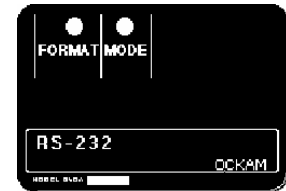
The 001 processor should be upgraded to software revision 16.3 in order to receive complete information from the 041 GPS interface. The upgrade consists of new ROM chips and is available for \$200. It can be field installed.



If you have an 040 Loran or Position interface (black case types), and don't wish to upgrade your processor, you will have to upgrade to the 041 interface.



If you have earlier versions of the RS232 interface (black case types), and don't wish to upgrade your processor, you will have to upgrade to revision E.



If you add one of the new components to a classic system, you may have to reset channel jumpers to get all the pieces to work together. See <http://www.ockam.com/NMEAjumpers.pdf> for details.

For more information, and to download a full working version of OckamSoft 4,

visit our website www.ockam.com

or call (203) 877-7453