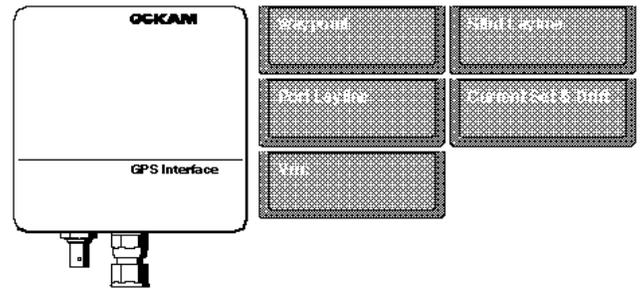


NMEA-0183 bus on Ockam

With the introduction of a new generation of interfaces, the Ockam System has added the capability to distribute NMEA-0183 and Ockam data simultaneously. By exploiting one of the previously unused channels of the Ockam bus, this new feature has no impact on Ockam system data handling capacity, and is backward compatible with all Ockam hardware and software except for the 088 Bus driver. The units that create this new functionality include the 041 GPS interface, the 042 NMEA tap and the 050D enhanced RS-232 interface.

041 GPS interface

The key component is the 041 GPS interface which replaces the 040D Position, 039 Lat/Lon and 045 NMEA driver interfaces. The 041 reads the GPS output and provides waypoint and position information to the Ockam system. It also creates NMEA sentences based on Ockam data and outputs them to the GPS, and optionally to the NMEA channel. Ockam data output to the NMEA channel is controllable by both switch setting and software control. Ockam generated NMEA outputs include

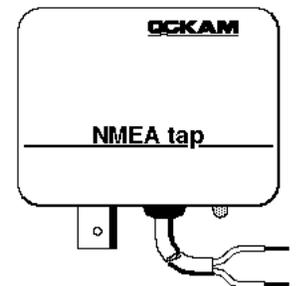


DBT (depth)	VDR (current)
HDG (heading)	VHW (boatspeed & heading)
MWD (true wind direction & speed)	VLW (logs)
MWV (apparent wind angle & speed)	VPW (Vmg)
MWV (true wind angle & speed)	VWR (apparent wind angle & speed)
RSA (rudder & tab)	VWT (true wind angle & speed)

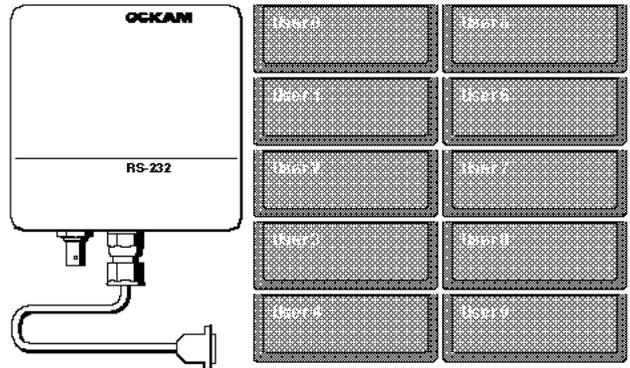
Control of the GPS by computer is now possible without rewiring. Text can be sent directly from an onboard computer to the GPS. For GPS's which have the capability, this allows uploading and downloading waypoints and controlling GPS functions from the PC.

042 NMEA tap

The 042 NMEA tap is designed to provide NMEA data to any device that only needs external input, e.g. autopilot and radar. As many taps as desired can be added limited only by system power requirements. The NMEA tap is inexpensive and eliminates the need to run hard wiring between the GPS and other devices. Since the NMEA data can be switched among different sources, including the on-board computer, the 042 can provide a data service impossible to achieve from point-to-point wiring as required by traditional NMEA.



050D RS232 interface The third component that can use the new NMEA channel is the 050D enhanced RS-232 interface which connects the Ockam system to on-board computers. The 050D provides the traditional functions of its predecessors; full access to all Ockam data, control of the instrument system and ability to output calculated data to displays. New functions include the ability to switch between Ockam and NMEA data or interleave NMEA data with Ockam data. It can also source data directly to the NMEA channel, and through user output commands, address data to the 041 GPS interface output and enable and disable the 041's NMEA channel output.



Cleaner wiring Using the Ockam bus to distribute NMEA data greatly simplifies the connection of GPS and other subsystems. No dedicated wiring is needed and there are no worries about overloading the talker. Simply run an Ockam bus by each device and connect an 041 or 042 box, and you're done (with the wiring anyway).

Troubleshooting NMEA problems This new system for distributing NMEA data does more than just clean up wiring. It also provides several previously unavailable troubleshooting aids.

- Each box includes monitor LEDs to indicate the presence of data.
- The 041 GPS interface automatically swaps the input signal wires internally allowing connection of either polarity. In addition to data LEDs, it also has a trouble light that indicates bad characters and missing Lat/Lon or Waypoint data sentences.
- At any time, and without disturbing any wiring, the GPS output can be monitored from a laptop while the system is in operation. The laptop can log this data to help support those calls to the subsystem vendors (us included).
- Under software control from an 050D, the current talker on the Ockam NMEA bus can be disabled, and data from the laptop can be substituted to troubleshoot subsystem sensitivity to field formats or missing sentences, etc. Again, this can be done at any time without disturbing any wiring.