

Inside SeaSonde

How SeaSonde USB Extension works

In order for applications, SeaSondeController and SeaSondeAcquisition, to talk with the receiver an USB driver must be installed. The installer InstallSeaSondeExtensions installs this driver. The driver's name is 'SeaSondeAwgiii.kext' and is an OS X kernel extension. Kernel extensions must be very robustly designed for if they crash, the kernel crashes (sometimes known as a kernel panic) and the only remedy is to reboot the computer. So a lot of extra effort was made to make 'SeaSondeAwgiii.kext' very robust.

Note that in OS 9, the SeaSonde USB drivers would patch the AWG module console interface into a serial port and AWGController would access the receiver using serial port functions. On OS X, this is no longer the case. The driver does not create any serial ports. SeaSondeController accesses the driver directly using OS X IOKit function calls. For this reason, SeaSondeController is not designed to interface to any ancient Transponders or Receivers, which use serial communications.

The driver is installed into the system folder in `"/system/library/extensions/"`. The 'SeaSondeAwgiii.kext' is dynamic in that it is loaded only when the computer detects the SeaSonde Receiver and it is unloaded when the SeaSonde Receiver is unplugged or turned off.

The driver has four different personalities. That is, it will load for four different types of SeaSonde devices. They are:

AwgiiiReceiver. This personality is the latest SeaSonde Receiver, which contains an AWGIII control module.

AwgiiReceiver. This personality is the older SeaSonde Receiver, which uses a front panel USB interface to connect to the serial AWGII module (in some cases, serial to a AWGIII module).

AwgiiiTransponder. This personality is the latest SeaSonde Transponder, which contains an AWGIII control module.

AwgiiiLoader. This personality is when an AWGIII module has never been programmed or is in the process of being updated. AWGIII modules can be firmware updated from the computer (AWGII modules cannot).

The driver will output diagnostic messages to the system.log. This log can be viewed easily from the Console application (in OS 10.2 you will have to manually open the log by typing the path `'/var/log/system.log'`). The system.log is a repository for all kernel drivers, so you will find a lot of messages. The SeaSonde messages will be labeled with AWGIII in them. The system.log can also be view by 'Apple Menu' to 'About This Mac' to 'More Info' to 'Logs'

If you wish to determine if the driver is actually currently loaded, open a Terminal application window and type 'kextstat' and return. It will show all loaded drivers. Our driver will be listed as 'com.codar.driver.SeaSondeAwgiii'. If you do not see the driver but you know a SeaSonde Receiver or Transponder is plugged in to the computer, then maybe the kext is not installed or is improperly installed; please try running InstallSeaSondeExtensions again. Not only must the driver be installed in the right system location, it must also have the proper file permissions and the system's kext cache must be updated. The installer takes care of all this as well as forcing the driver to load the first time without having to reboot or unplug the SeaSonde.