



Clear signal

Two ways to cut through AIS clutter

WATCHMATE RX

Modern chartplotters are AIS ready, but even now, when the Automatic Identification System (AIS) is mostly only broadcast by ships, the resulting targets can be so numerous around ports as to significantly clutter the navigational display. The situation is set to become even more congested, as Class B AIS transponders become more common on smaller commercial vessels and leisure craft. Dedicated AIS displays make a lot of sense. Vesper Marine's original WatchMate display, for example, incorporated no receivers, being mainly intended for use in conjunction with an AIS transponder (which monitors both AIS channels simultaneously). Combined Class A display/transponders are used on ships, and Class B equivalents such as Navico's A150, for example, are becoming available.

Each transponder transmits on one of the two dedicated AIS channels at a time, but alternates between them, so cheaper, single-channel or multiplexing receivers miss about half the



A dedicated AIS display makes sense of all the signal clutter.

'dynamic' messages (ship's position, course and speed, broadcast at least every 10 seconds when underway) and may have to wait 12 minutes to receive the associated 'static' message that includes the vessel's identity and call sign. Vesper Marine's latest product, the WatchMate RX, incorporates two parallel receivers, so it too can monitor both AIS channels simultaneously and get all the data available.

The WatchMate RX is user friendly and sophisticated, particularly in its customisable ability to filter out non-critical targets. It's waterproof (IP66), solidly built for bracket or

flush mounting, has a 12.7cm, 320x240 pixel monochrome LCD, draws just 250mA, and can drive an external alarm. All it needs to receive AIS is a VHF antenna, but to display targets in relation to your own boat and monitor for potential close approaches, etc., you need to

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feed it an NMEA stream from a GPS. It can then output combined GPS and AIS data via a single NMEA connection to a chartplotter or computer. Alarms can be set for various criteria, including predicted closest approach, and can be cancelled (and re-activated) for individual targets. The main radar-style display employs different symbols to distinguish between general targets, those that meet your alarm criteria, and 'buddy' boats. It also has symbols for AIS navigation aids, and 'lost' targets (expected update messages that haven't been received). Four soft-keys are used to navigate through pages, and it can display a very wide range of Class A and B data, including position reports, voyage data, static data, aids to navigation, meteorological, hydrographical and safety messages.

Many chartplotters are much more limited in what information they can display, and can only handle a relatively small number of targets simultaneously. This bit of kit can deal with 250 targets, and gives priority to those of higher importance if more than 250 signals are being received. This isn't an academic matter, for apart from the expected dramatic increase in AIS-fitted vessels, reception range is often well over 160km. I sometimes receive all the ships anchored off Newcastle, plus those at sea from north of Taree to south of Wollongong, from my mooring in Pittwater. Unlike voice VHF, AIS is often received way beyond line of sight.

See www.vespermarine.com for more.

WINRADIO + SHIPLOTTER

Another option is to connect a VHF radio to a computer running AIS decoding and display software. Many scanning VHF receivers can tune to one of the two AIS channels, as can most ham 2m and general-coverage transceivers. There are also several AIS computer programs available. The one I've used over several years is ShipPlotter. If the audio output of the receiver is cabled to the line-in socket, ShipPlotter decodes the binary signal bursts, and also displays (and logs) the AIS messages within a couple of seconds. It can plot and track targets in relation to your location, superimposed on a chart or a Google Earth image. It can do the same if fed the NMEA output from an AIS receiver via a serial port or a serial/USB adapter.



The Winradio receiver feeds AIS signals into a computer, which decodes and displays them.

I recently used ShipPlotter in conjunction with a Winradio receiver specifically designed to work with computers. Winradio's WR-G33EM is a marine-oriented HF receiver, but I was using one of their G305e receivers because it also covers the VHF and UHF spectra. It connects via USB and doesn't have an audio output of its own, but ShipPlotter uses the radio's 'Virtual Soundcard', resulting in a sensitive, single-channel AIS receiving system.

AIS began as a collision avoidance system, but now has many practical spin-offs. There are, for example, many websites that display real-time AIS data for ports and coastal areas. We're also starting to see AIS-enabled AtoN (Aids to Navigation), where a buoy displays as a special AIS target, and it's likely this will eventually evolve into 'virtual' AtoNs, where the buoy isn't physically present, but an AIS target shows on the display. ⚓