Buyer's guide to AIS

David Pugh gives the low-down on AIS: how it works, how to choose and how to use it

AIS has fast become a must-have piece of onboard electronic safety kit

In the space of five years, AIS has gone from being a niche product endorsed by the enthusiastic few to a must-have item of onboard electronics. It's easy to see why: radar was previously the only electronic tool we had for collision avoidance and it required considerable skill to read correctly. AIS, however, gives an instant and easily interpreted check on a vessel's course and speed, making it simple to identify potential hazards.

This facility led to some early confusion between radar and AIS, and it should be made clear from the outset that one is not a replacement for the other. AIS is easy to use and provides much more information about a target than radar, but is entirely dependent on the target both having an AIS transponder and transmitting the correct information. Radar, on the other hand, is much more open to misinterpretation by the user but, used correctly, gives a wholly independent view of hazards in the area. These hazards include leisure and small commercial vessels not obliged to carry AIS transmission equipment, and of course static hazards such as landmasses and navigation marks.

What is AIS?

The Automatic Identification System (AIS) was originally introduced for commercial shipping, and that remains its main purpose. Vessels over 300 gross tonnes and all passenger vessels are required by law to have AIS on board. These vessels use the original, Class A specification AIS.

Because it is regarded as a safety feature, Class A AIS is designed to be reliable. It does this using a communication protocol known as Self-Organising Time Division Multiple Access, or SOTDMA. This works by each transmitter liaising with other transmitters in the area to organise a free time slot in which to transmit. All the transmitters are synchronised with the GPS clock, and once the time slot is booked no other transmitter can use it. Two VHF channels are used (87B and 88B) to give a total of 4,500 available time slots per minute, but in order to allow for interference problems transmitters use both channels, reducing capacity to 2,500 time slots per minute. However, were the system to near capacity the protocol will permit slot-sharing to maximise throughput, and receivers can then prioritise transmissions according to proximity.

Transmissions occur every 2 to 10 seconds when under way according to the speed of the vessel and every three minutes when anchored, and contain the vessel's MMSI, status (eg anchored), rate of turn, SOG, position, COG, heading, bearing and a timestamp. An additional broadcast every six minutes gives the ship's IMO number,