

# Which AIS is best?

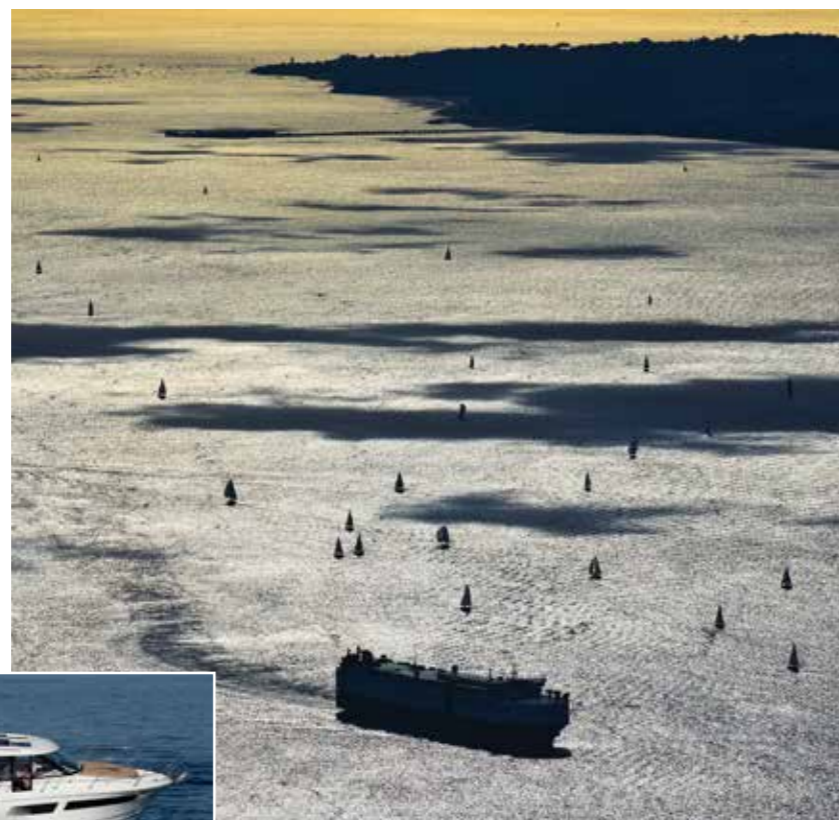
Gilbert Park dives deep into AIS tech to discover the benefits of Class B+

I'd been thinking about buying an AIS transceiver for my Merry Fisher 855 for some time. I use my boat mainly in the Solent, where avoiding other vessels is a major concern, but in the end it was an Marine Accident Investigation Branch (MAIB) report that suddenly reminded me of an incident I avoided (thanks to AIS) on my previous boat a few years before. Then 'Black Friday' (for bargain electronics shopping on the Internet) made me knuckle down and place an order to fit a unit over winter.

The MAIB report in question concerned the collision in September 2018 between the *Phoenix*, a 10m motor cruiser and the Ro-Ro passenger ferry *Red Falcon* in the Solent. Thankfully nobody was injured, but the damage to the *Phoenix* was significant.

There was criticism in the report for the skipper of the *Phoenix* and (to a lesser extent) the crew of *Red Falcon*, but the investigators simply stated that an AIS transceiver on board the smaller boat 'would have enabled the display of *Phoenix* as an AIS target on *Red Falcon*'s ECS, which was readily visible to the ferry's chief officer, and the display of *Red Falcon* as an AIS target on board *Phoenix*'.

But reading this report triggered a memory of mine from another bright, sunny day six years ago. We were leaving



ABOVE Numerous very large ships interact with a wide variety of leisure boats day and night in the Solent. AIS offers significant safety benefits. LEFT A Merry Fisher 855 similar to the author's



Felixstowe through the North Channel in my Seaward 25 at the time, which was fitted with an AIS receiver linked to the multifunction display. All of a sudden the AIS audible and visual alarm went off warning of a dangerous target and showing it was two miles behind us. Because of the warning I was easily able to avoid a collision. The cargo vessel took no action: no change of course, radio call or sound

BELOW Caught on CCTV – a serious incident that AIS may have prevented



ABOVE The Dorset 10m powerboat *Phoenix* was pushed along by the IOW ferry *Red Falcon* for 18 seconds



READ THE FULL MAIB REPORT HERE: [www.gov.uk/maib-reports/collision-between-ro-ro-passenger-ferry-red-falcon-and-motor-cruiser-phoenix](http://www.gov.uk/maib-reports/collision-between-ro-ro-passenger-ferry-red-falcon-and-motor-cruiser-phoenix)

signal. As both the ship's name and MMSI number were displayed on the screen I called the watchkeeper. He hadn't seen me at all.

So my mind was made up about fitting an AIS transceiver to my new boat, but I still needed to do a bit more research.

### What is AIS?

An AIS transponder is basically a VHF data radio connected to a GPS and a VHF aerial. The radio broadcasts data about your boat and receives data from any other transmitters within range, then outputs that information to a display.

There are three different Classes of AIS transponder for vessels: A, B and more recently B+. They differ in when and how they broadcast their information, so as not to interfere with each other. Each transceiver determines what other AIS units are within its range and then books a time slot of 26.6 milliseconds in which to transmit its information. This is known as Time Division Multiple Access (TDMA), and allows up to 4,500 vessels to operate in the same vicinity. Type A is also much more powerful than either of the Type B

options, but B+ is more powerful than the ordinary Class B.

Type A is for boats over 300 tons or carrying more than 12 passengers. It negotiates its next time slot and future ones with other Type A units using a system called Self Organised Time Division Multiple Access (SOTDMA).

Type B transceivers use a different system to take available slots called Carrier Sense Time Division Multiple Access (CSTDMA). Class B transmissions have to give way to Class A transmissions, and so Class B may have to delay its transmission to the next available time slot.

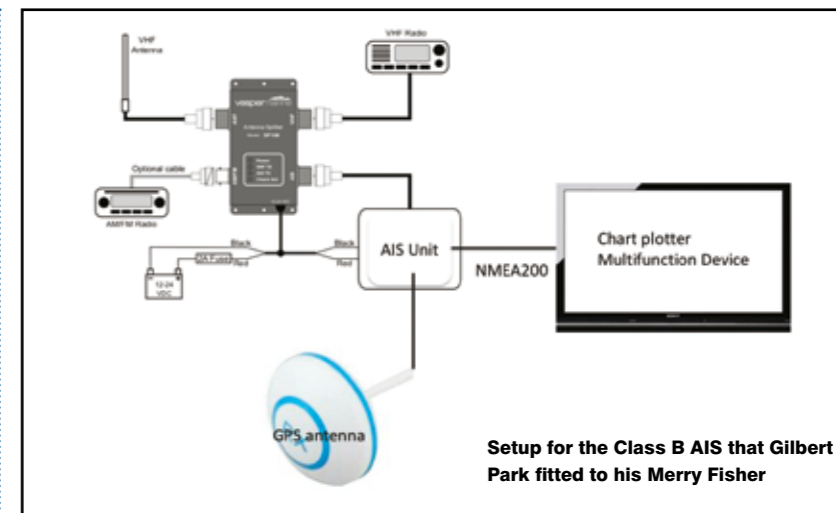
The frequency of transmission by both A and B class units depends on several factors, including speed over ground. Thus a high speed ferry will transmit every few seconds while a pleasure boat with a Class B transceiver may only broadcast every 30 seconds.

Recently, an in-between Class B+ has been made available. This uses the same SOTDMA system as Class A, and has the same priority ensuring it will always transmit at its negotiated time.

### Buyer's guide

So how to decide which class to buy? First let's dismiss Class A as they're expensive and not designed for the leisure sailor. This leaves the newer Class B+ or the standard Class B device.

For displacement boats travelling at slow speeds, operating close to the coast there is little advantage to Class B+ over Class B. But for planing boats that go faster the B+ unit will update more often



Setup for the Class B AIS that Gilbert Park fitted to his Merry Fisher

and more reliably meaning other boats' receivers and transceivers will be displaying a clearer picture of your movements. For instance: at 30 knots a boat will move 0.25 miles in 30 seconds. If its Class B time slot is taken by a Class A or B+ AIS signal then it is possible that a further 30 seconds could elapse before the next screen update, during which time the boat will have travelled another quarter of a mile.

Additionally, if you are travelling offshore then the more powerful signal from a B+ AIS is much more likely to be visible to AIS satellites than the Class B. This could be important in a search and rescue situation.

My boat can do 25 knots, but when I looked at how I use my boat – travelling at

maximum 18 knots and then only in uncongested waters and not going offshore – I wasn't convinced Class B+ was worth the additional cost.

### Hidden extras

Some Class B and B+ units have an integral GPS antenna; others need external ones. All units will need a VHF antenna or a splitter and cables to connect the AIS output to a display.

It is possible to use an existing VHF aerial and a splitter to save installing a dedicated VHF aerial. A splitter is a small box that permits two devices (in this case an AIS transceiver and a normal VHF radio) to connect to a single VHF aerial cable. Some splitters may slightly degrade the AIS transmission, while others now claim to improve it. VHF radio is unaffected. Some transceivers even have an integral antenna splitter.

Looking at various websites the cost differential between a Class B and B+ was small, but when I rang Cactus Navigation to discuss it they offered me a free Vesper SP160 amplified splitter with the Vesper XB6000 Class B AIS – both units I was considering.

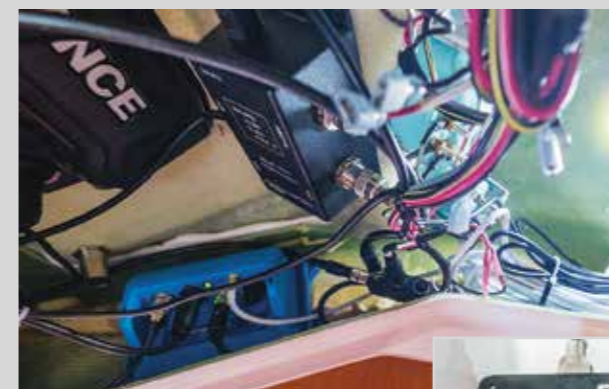
The 12db amplifier inside the Vesper Marine SP160 works to cancel out any loss through splitting by enhancing AIS target and VHF reception. The manufacturer claims that users report improved VHF reception due to the amplification over long cable runs and possibly multiple cable joints.

This offer ticked a lot of boxes: no need to fit a new aerial, the transceiver had a built-in GPS as well as an external GPS aerial, and most connecting wires were included resulting in a saving of several hundred pounds.

### ABOUT THE AUTHOR

Now retired from a lifetime in intensive care medicine, Gilbert Park enjoys being on the water. Having had enough drama in his working life he spends time making his boat as safe as possible for him, his crew and visitors.

### Installation top tips



LEFT and BELOW Adhesive pads were used to simply stick some lightweight units like the AIS splitter in place

**1 GPS Setup** Requires a computer with a USB connection. Take care entering your MMSI number: once in you can't change it without a special clearance code provided by your unit's manufacturer

**2 Adhesive** I used high modulus adhesive pads to stick some of the lower weight units in place behind quite thin GRP. Only the heavy transceiver unit needed a thick bulkhead to be screwed into.



**3 Silence switch** I could have fitted a 'silence switch', which turns off my outgoing AIS identification info, but I don't see the point. I want people to know here I am and on several boats I have had this facility but never used it.