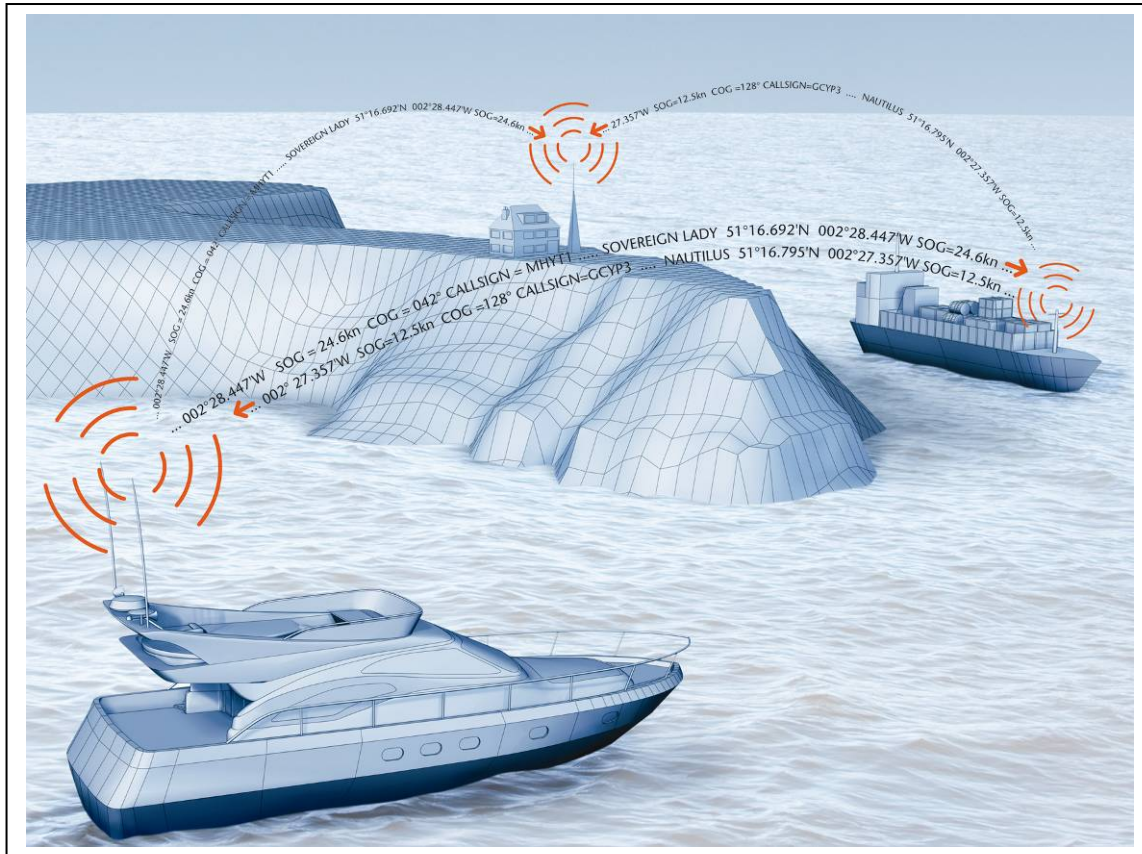


An explanation of AIS and Class B

This document is designed to familiarise interested parties with AIS technology and its capabilities



See the location, track and current course and speed of other AIS users and provide your information too - all in real time. Check for closest point of approach and time to closest point of approach and positively identify the target allowing easy VHF voice communication.

That's amazing, that's AIS and it's here right now!

Background

AIS (Automatic Identification System) is the mariner's most significant development in navigation safety since the introduction of radar. The system was originally developed as a collision avoidance tool to enable commercial vessels to 'see' each other more clearly in all conditions and improve the helmsman's information about his surrounding environment. AIS does this by continuously transmitting a vessels identity, position, speed and course along with other relevant information to all other AIS equipped vessels within range. Combined with a shore station, this system also offers port authorities and maritime safety bodies the ability to manage maritime traffic and reduce the hazards of marine navigation.

Due to the great safety benefits offered by AIS, this technology was made compulsory throughout the world in 2002 for all passenger ferries and vessels over 300 gross tonnes.

How AIS works

The Automatic Identification System was developed to allow ships and coastal stations to accurately locate and identify one another. An AIS transceiver uses VHF radio and GPS technology to communicate with other nearby ships.

An AIS transponder determines its own position, speed and course using a built in GPS receiver. This information is combined with other important navigation information and automatically communicated between AIS equipped vessels without any user interaction.

AIS transponders on other vessels and coast stations receive this information and use it to build up a live graphical display of traffic in the area. The transponder can be connected to many types of chart plotter or PC charting software to give a RADAR type display of vessel positions. AIS does not require a radar, but can offer similar capabilities and even enhance a radar image if a radar has already been fitted to the vessel.

The range or coverage of the system is similar to a VHF radios. The system also has the advantage that VHF radio signals will travel around bends and over islands giving better coverage than RADAR or enhancing a RADAR picture when used together.

Benefits of AIS

- "See and be seen".
A Class B transponder continuously receives information from all Class A and Class B equipped vessels around you and displays this information on your standard chart plotter or PC. At the same time your Class B will transmit your position to all AIS equipped vessels automatically.
- Safety at night and in poor weather conditions
The class B AIS is a vital navigation tool in poor visibility conditions. The information received from other AIS 'targets' provides the user with vital navigation information and the position transmission alerts other vessels to the users location.
- Combined with radar, AIS gives you the best possible picture of your situation in all conditions
- Safety in high traffic / commercial shipping areas
- Position transmission to authorities / nearby vessels in case of emergency
- Best possible picture of a dynamic environment (moving vessels)
- Graphically view your position in relation to other vessels when connected to suitable display
- Ability to 'see around the corner' – vhf transmissions effectively make it possible to see around a headland, bend on a river or island
- Positively identify the identity of a target with name, callsign and MMSI number available – then easily establish VHF voice contact or initiate a DSC VHF call
- Track vessels of interest such as friends/ colleagues



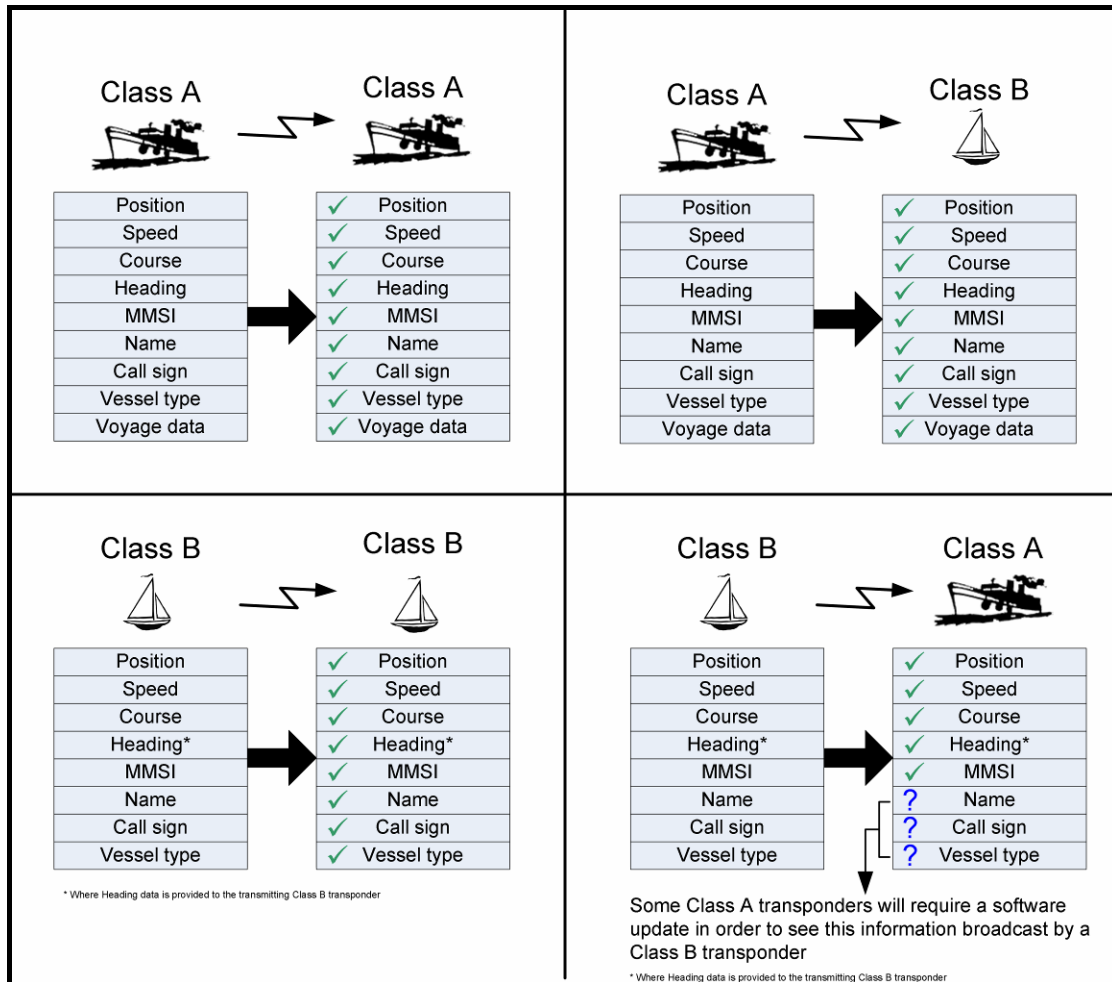
AIS Classes explained

Two types of AIS transponder are available, Class A and Class B.

Class B transponders have been developed to provide the safety and navigation benefits of AIS to smaller vessels with lower cost and simpler installation when compared to Class A. As the Class B system was developed after the introduction of Class A it was designed to be compatible whilst protecting the safety critical operation of the Class A system for big ships.

AIS receivers are also available; these units will pick up broadcasts from both Class A and Class B AIS transponders but don't transmit their own position. A receiver allows you to see the position of other vessels however your position won't be visible to them.

The following diagram shows what information each type of transponder will receive from the other.



Please note that in the last example 'Class B- Class A' there are some instances when a class A user may not see the name, call sign and vessel type- however the users vessel will still be displayed in it's correct position. In this circumstance, the receiving vessels display may default to showing the MMSI rather than the vessels name. This is generally only true on some of the older Class A equipment.

Class B AIS

Despite the huge safety benefits of commercial (Class A) AIS the cost of this advanced technology has previously been a barrier to introducing AIS to leisure craft and light commercial vessels. To overcome this problem the class B AIS transponder has been developed to provide all the benefits of AIS in a cost effective, reliable and user-friendly product for users that do not need the comprehensive data required for commercial shipping.

The class B product has been designed with the light commercial and leisure user's budget in mind, yet still offers all the advantages of AIS. The device can be easily installed and connected to most chart plotters or PC based navigation software. Even without a connection, your data will be sent to other AIS users within range

Comparison table

A Class B AIS transponder can be fitted to any non-SOLAS vessel. A Class A transponder is only required on ships in excess of 300 gross tons on international voyages.

Receive only AIS units are available however these lack the ability to broadcast your vessels position to others. Receive only units aren't subject to international standards so don't have the same ability to receive all AIS messages on all channels.

AIS PARAMETERS	Class A	Class B	Receive only
Transmit own position and vessel data	✓	✓	✗
Receive position from Class A vessels	✓	✓	✓
Receive position from Class B vessels	✓	✓	✓
Receive name and call sign from Class A vessels	✓	✓	✓
Receive name and call sign from Class B vessels	✓*	✓	✓*
Includes certified GPS receiver	✓	✓	✗
Transmit "Safety Related Message"	✓	✓	✗
Meets international AIS standards	✓	✓	✗
Can be fitted to SOLAS vessels	✓	✗	✗
Can be fitted to non-SOLAS vessels	✓	✓	✓
Two parallel receivers for complete AIS reception	✓	✓	✗**
DSC receiver for automatic international channel control	✓	✓	✗
Indicative cost in UK £ Inc VAT	£2300	£500	£250

- * Some Class A transponders and receive only devices may require software update to receive the latest Class B vessel details messages.
- ** Some receivers may include these features

DIGITAL YACHT SMARTERTRACK AIT250

The AIT 250 Class B transponder is a fully compliant AIS Class B transponder providing all the benefits outlined above and meets the strict international standards. Here are some of its key features:



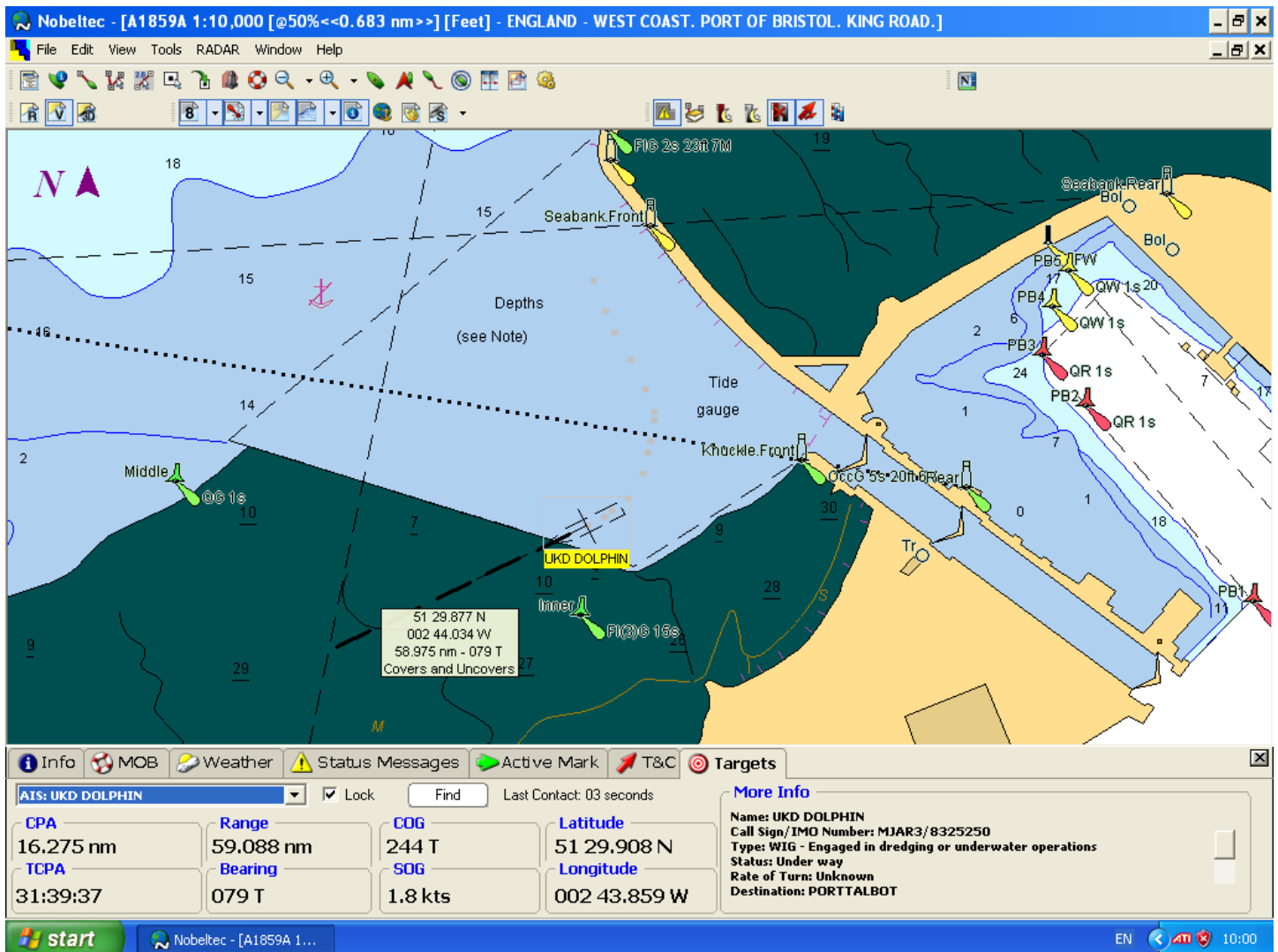
- Silent Mode - The AIS device can be put into 'silent mode' by depressing the 'S' button on the front of the device. This function allows the user to stop transmitting their position when required. This function may be useful when fishing at a 'secret spot'
- Water Resistant - Robust, coated aluminium case suitable to the harsh marine environment. The device is designed to operate from -25 to +55 degrees
- Internal GPS - The class B includes an internal GPS module to facilitate ease of installation and use
- Standard NMEA interface - The AIT250 Class B is design to be compatible with all modern plotters and PC's. The NMEA interface is the standard in marine connections and ensures simple installation

- Designed to internationally recognised IEC standards. Tested and approved by BABT, BSH, USCG (US C/Guard)
- Supplied with dedicated GPS and VHF antennas and ships with proAIS – an easy to use PC software configuration tool allowing your vessel's parameters to be entered into the unit when initially setting up. Once installed, leave connected and join the AIS system
- Flash upgradeable allowing easy updates if enhanced or new AIS features become available

ON BOARD DISPLAYS

An AIS transponder or receiver will provide a data output to compatible plotters, radars and other electronic chart systems (such as ECDIS or PC devices), allowing an overlay of targets onto the electronic chart. Most systems allow filtering of AIS data (such as by vessel size or speed) and interrogation of the target to establish name, MMSI and even destination for Class A systems.

The screen shot below shows a dredger (M/V DOLPHIN) operating in Avonmouth docks. The navigation software calculates closest point of approach and time to closest point of approach and overlays the vessels current position, course and previous track onto the charting screen. This system even scales the vessel to its real dimensions.



INSTALLATION

A Class B transponder can easily be integrated with your existing equipment. A dedicated VHF and GPS antenna is required and is supplied with the AIT250. There must also be a connection to your boat's power supply. proAIS configuration software makes initial setup a breeze

Information received by the transponder can be used by your chart plotter or navigation PC with a simple NMEA data connection. Check with the manufacturer of your chart plotter to see if it is AIS ready. Most current plotter and multi function products from Raymarine, Standard Horizon, Lowrance, Furuno, Northstar, Simrad and Navman will accept an NMEA AIS input.

To use the Class B AIS to transmit your position it should be programmed with your vessels MMSI number. If you don't already have one (e.g., for a VHF DSC radio) it can easily be obtained from the local radio licensing authority.

NEED TO KNOW MORE?

We've a friendly team of advisors available at Digital Yacht Ltd. Reach us on 01179 114111 or email sales@digityacht.co.uk.