DIGITAL YACHT

SAIL BOAT   SPORT FISHING   MOTOR BOAT

AIT1500 CLASS B AIS TRANSPONDER

Installation and instruction Manual

1. Introduction

Congratulations on the purchase of your AIT1500 Class B AIS Transponder. It is recommended that your transponder is installed by a professional installer.

ⓘ **This Quick Start Guide will provide basic information on the AIT1500 to allow you to install and get the AIT1500 working.**

2. Before you start

You will need the following items and tools to complete the installation:
- Class B AIS Transponder.
- Dedicated VHF/AIS antenna and cable – not supplied
- Access to 12V or 24v DC power supply where the unit is to be installed.
- Four M4 screws or other fixings appropriate to the mounting location.

To configure the unit you will need:
- A PC running Microsoft Windows XP® / Windows Vista® / Windows 7 or Mac OSX with a free USB port.
- proAIS2 Class B AIS Transponder configuration software – Windows and Mac versions of software are supplied on the latest Digital Yacht CD-ROM.
- An MMSI number for your vessel

Note: *You can obtain an MMSI (Maritime Mobile Service Identity) from the same authority that issues ship radio licences in your area. An MMSI may have already been provided with your existing VHF radio licence. The MMSI number used for the AIS Transponder should be the **same** as that programmed into your VHF DSC radio.*

ⓘ *If you do not have an MMSI number the AIS Transponder will operate in receive only mode.*
* **Do not enter an invalid MMSI number.**

3. Installation

Before starting installation select a suitable location for the AIS Class B Transponder. The unit is water resistant; however it should be installed below deck in a dry location. When locating the unit you should consider:

- Routing of power and VHF antenna cables to the unit.
- Provision of sufficient space behind the unit for cable connections.
- Routing of data connections to PC or chart plotter from the unit.
- Maintaining the compass safe distance of 0.5m.
- Visibility of the front panel indicators.

Installation Step 1 – VHF/AIS Antenna or Splitter
- Install the VHF/AIS antenna (not supplied) according to the hand book instructions supplied with the antenna.

- If you are going to share the boat's existing VHF antenna i.e. use the antenna for both the VHF and AIS, you will need to install a suitable antenna splitter. It is very important that this splitter is suitable for use with an AIS Transponder as some of the lower cost splitters only switch one input and are only suitable for use with an AIS receiver. We recommend our SPL2000 "Zero Loss" Technology splitter.

- The AIS antenna connector on the AIT1500 is a BNC type connector and it may be necessary to get a PL259 to BNC adaptor if you are connecting a normal VHF antenna to the AIT1500 as these are terminated in the standard PL259 VHF connector.

Installation Step 2 – Locating and Fixing the unit

- The AIT1500 has a high sensitivity GPS receiver with an internal antenna which is designed to be used below deck in GRP Fibreglass hulled boats. The GPS antenna is located in the top left corner of the unit behind the Digital Yacht Logo.

- The AIT1500 unit must be mounted on a vertical bulkhead so that the GPS antenna (top edge of AIT1500) is pointing towards the sky. Care should be taken to ensure that only GRP fibreglass is between the GPS antenna and the sky, with no metallic or electrical objects above the antenna.

- Location of the AIT1500 is critical for good GPS reception and it is strongly recommended that before fixing the AIT1500 in the chosen location, that the GPS reception is checked.

- The supplied proAIS2 software for PC/Mac is ideal for this purpose. With the unit powered up (from the boat's 12/24v DC supply) and connected via the USB cable to a PC/Mac running the proAIS2 software, view the "GNSS Status" page and ensure there is good GPS reception with the AIT1500 in this location.
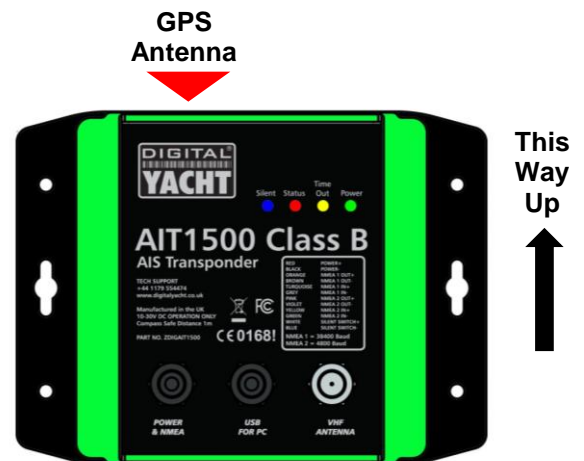
Unit Dimensions
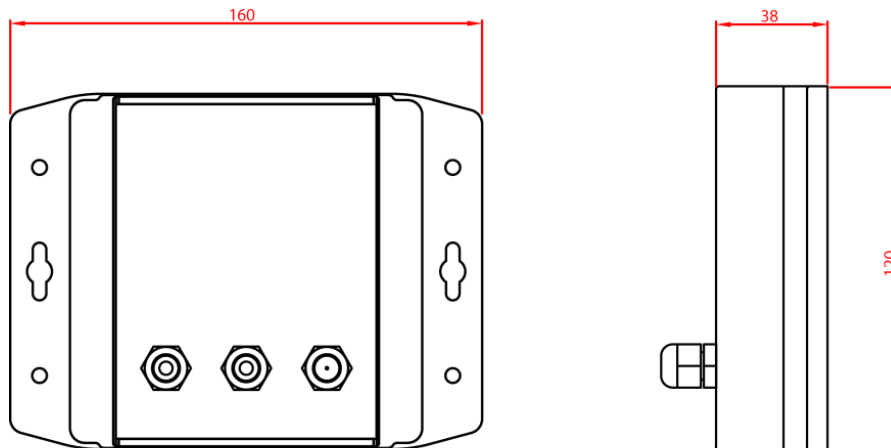
- Once you are confident that the AIT1500 is in the best location for good GPS reception, secure the AIS Transponder to a flat vertical surface in the selected location, using four M4 wood screws or other fixings suited to the material the unit is being fixed to.

Installation Step 3 - Power

- Provide power connections to the unit. Power is connected to the twelve core PWR/DATA cable on the Red and Black wires. The Red wire is the positive (+) connection. The Black wire is the negative (-) connection.

- Connect the stripped wires to the nearest source of primary 12V or 24V DC power. Ensure that the supply is connected via an inline 1A fuse or suitable circuit breaker. Add the fuse in the positive power connection to the unit if necessary.

- The AIT1500 Class B Transponder is designed for a 12V or 24v DC systems.

Installation Step 4 – NMEA Interfacing

- A table showing what each of the 12 wires of the PWR/DATA cable does is printed on the AIT1500 Transponder and repeated below for your convenience;

Wire colour	Description	Function
RED	Power in +	Power supply connections
BLACK	Power in -	
B**LUE**	Switch input-	External switch connection for silent mode
WHITE	Switch input+	
ORANGE	NMEA0183 port 1 TX+	High speed NMEA0183 output (38,400 baud) intended for connection to chart plotters
BROWN	NMEA0183 port 1 TX-	
TURQUOISE	NMEA0183 port 1 RX+	High speed NMEA0183 input (38,400 baud) Not normally used
GREY	NMEA0183 port 1 RX-	
PINK	NMEA0183 port 2 TX+	Low speed NMEA0183 Output (4,800baud) intended for connection to other NMEA0183 devices requiring a GPS feed. Note AIS data is not available on this output.
VIOLET	NMEA0183 port 2 TX-	
YELLOW	NMEA0183 port 2 RX+	Low speed NMEA0183 input (4,800baud) intended for connection to other NMEA0183 compatible sensors for multiplexing of data to the chart plotter
GREEN	NMEA0183 port 2 RX-	

- The most common connection to a dedicated chart plotter is to take the NMEA Output 1 (Orange+ and Brown –) from the AIT1500 Transponder and to connect it to a free NMEA Input on the plotter. You must then tell the chart plotter that AIS data is connected to this port and set the baud rate to 38,400 Baud – the standard speed for AIS data. Consult the instruction manual supplied with your Chart Plotter to understand how this is configured.

- The AIT1500 has a second NMEA 0183 output that can be used to pass GPS data to a VHF radio or instrument system. NMEA Output 2 transmits GPS data at 4800 baud – RMC, GGA and GGL sentences.

- NMEA 0183 data from other equipment can be connected to either of the NMEA Inputs of the AIT1500, although this is most commonly connected to NMEA Input 2 (Yellow+ and Green-) at the normal 4800 baud rate for NMEA 0183. This data is then multiplexed with the AIS data and output on the NMEA Output 1 at 38,400 baud and also on the USB – useful when connecting to equipment that only has one NMEA input.

Installation Step 6 – USB Interface

- When connected to a PC or MAC via the USB cable, the AIT1500 will only get enough power from the computer to power the microprocessor and the AIS receiver. This allows you to program the MMSI number and other static data at home or in the office prior to installation. The AIT1500 will not transmit or get a valid GPS position fix when only powered from the USB interface and the RED Status LED will always be lit when powered from the USB cable.

- If you need to extend the USB cable, please use a USB extension cable that is no more than 4m in length. The maximum length of USB cable without the use of a powered extender cable or Hub is 5m.

- Please do not plug in the USB cable of the AIT1500 to your PC until after you have installed the proAIS2 software, which also installs the USB drivers for the AIT1500. Installing proAIS2 is covered in section 4 - Configuration.

- After the AIT1500 is configured, the USB connection can be used to provide data to navigation program running on a PC or Mac. Please note that only one navigation program at a time can receive data from the AIT1500.

- The AIT1500 USB interface is not fully isolated and high levels of static or large differences in ground voltages between the PC supply and the boat's DC supply can damage the AIT1500's USB interface. For maximum reliability, if you intend to permanently connect the AIT1500 to a computer, we recommend using an NMEA to USB adaptor connected to the AIT1500's NMEA0183 output which provides an extra level of protection/isolation and can avoid costly damage to the AIT1500.

Installation Step 7 – Remote Switch

- To connect a remote "Silent" switch that allows you to turn on/off the transmission of your own vessels position (good etiquette when moored or in congested but safe conditions), you will need a conventional toggle type switch (SPST), connected between the White and Blue wires.

- This can be mounted anywhere on the boat, thus allowing you to mount the AIT1500 below deck but having a switch in the cockpit or wheel house to control the Silent Mode operation.

- When the remote "Silent" switch is ON (closed) the AIT1500 will be in Silent mode (not transmitting) and when the switch is OFF (open) the AIT1500 will be in normal transmitting mode.

Installation Step 8 – Power Up

- Turn on the 12V or 24v power to the AIT1500

- Verify that the green LED illuminates for a short period and then all four LED indicators on the front of the unit flash once, followed by illumination of the amber and red LED's.

- Installation is now complete. The AIT1500 needs to be configured using the proAIS2 software – see next section.
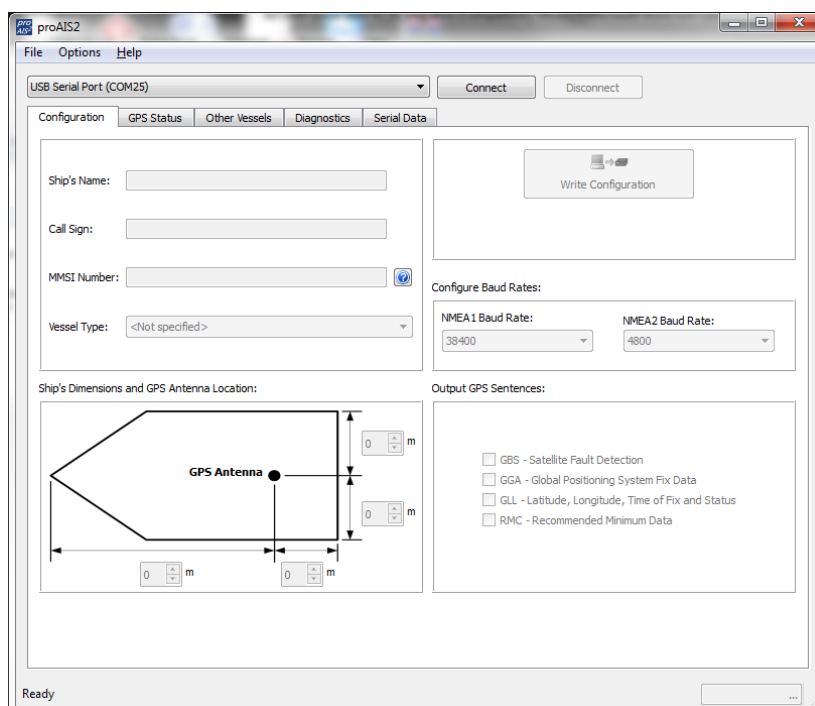
4. Configuration

The AIT1500 transponder must be correctly configured for your vessel before operation. All configuration information must be entered carefully as this information will be transmitted to other AIS equipped vessels and shore stations.

The AIS transponder is configured by connecting to a PC or Mac running the 'proAIS2' configuration tool supplied. For the purposes of programming, the AIT1500 can take sufficient power from the USB cable to communicate with the computer but not to operate as a Class B Transponder which requires an external 12v or 24v DC supply.

- For Windows PCs, insert the supplied Digital Yacht Software CD-ROM and run the Setup.Exe program located in the "proAIS2 for Latest Transponders" folder. This installs both the USB drivers for the AIT1500 and the proAIS2 application.

- For Macs, insert the supplied Digital Yacht Software CD-ROM and install the "proAIS2.dmg" located in the "proAIS2 for Latest Transponders\Mac OSX" folder. This just installs proAIS2 as the drivers are already pre-installed on Macs.

- Plug in the AIT1500 USB cable in to your computer and then launch proAIS2. Select the COM port that the AIT1500 has been allocated by Windows or OSX. Click the 'Connect' button The computer will now query the AIT1500 and display any "Static" boat data stored in the unit. All new units will have no data stored and so you will just have a series of blank boxes in which you will need to enter your boat's data (see below).

1. Enter Vessel Name, Call Sign and MMSI
2. Enter vessel dimensions and location of GPS antenna to the nearest metre.
3. Select the most appropriate vessel type.
4. Click "Write Configuration" to save the data to the AIT1500
5. Read the warning message carefully and proceed only if the MMSI number is correct.
6. Configuration of the AIS Class B Transponder is now complete

*Note: ***For security reasons the MMSI can only be programmed once. Make sure you enter the correct number and double check when ProAIS2 warns you regarding MMSI programming. The MMSI can only be changed by returning the unit to your dealer.***

5. Operation

Once installed and configured correct operation of the AIS transponder should be verified as follows:

1. Check that at least one of the LED's on the front of the unit is illuminated. If the red 'Error' LED is illuminated please refer to the troubleshooting section in the AIT1500 User Manual.

2. Check that the unit has a good GPS lock. If the GPS is locked the Latitude and Longitude will be displayed on the "GPS Status" tab in proAIS2 along with a number of green bars in the signal strength graph.

3. If the unit does not have GPS fix within a few minutes check your GPS antenna has a clear view of the sky, is to the correct specification and that the GPS antenna cable is connected.

4. Check that the Green 'Power' LED on the front of the unit illuminates. This will not happen until the unit has GPS fix and has transmitted its first position report. Please allow up to 5 minutes for this to occur. **If the Green LED is illuminated you have successfully installed and configured the unit.** The proAIS2 application can be closed and the PC disconnected from the unit. The unit requires only a power supply to operate.

5. If you are in an area with other AIS equipped vessels you can check the "Other vessels" tab in ProAIS2 to view position reports received from other ships.

6. Troubleshooting

If the green LED is not illuminated after around 5 minutes then please check the following:

1. Is the MMSI number programmed?
Check the "Diagnostics" tab in proAIS2. If there is a red cross next to the "AIS Transceiver MMSI Valid" item then you have not correctly configured the MMSI.

2. Does the unit have a GPS position fix?
Check the "Diagnostics" tab in proAIS2. If there is a red cross next to the "GPS position fix" item then the unit does not have GPS fix. Check your GPS antenna and connections.

3. Is the unit reporting any alarms?
Check the "Active alarms" area in the "Diagnostics" tab of ProAIS2 & refer to the troubleshooting guide at the back of the ProAIS2 user guide.

4. Is there an external power connection?
When connected to a computer via USB, the AIT1500 can take enough power from the USB port to work as an AIS receiver but not as a Class B transponder. Occasionally if a fault occurs in the boat's wiring, a fuse blows or the circuit breaker trips, then the AIT1500 will lose external power and only have the USB power. In these circumstances, the AIT1500 will receive AIS targets but not transmit its own position and the Red and Yellow LEDs will be lit.