

Technical Support Article



Article Number - 00011-2010

Date - 10th August 2010

Article applies to – AIT250 and AIT1000 AIS Transponders

ISSUE: Fault Finding AIT250 and AIT1000 Units

Once an AIT250 or AIT1000 has been installed and has been operating correctly for some time, the most common causes of failure are the external connections i.e. Power, VHF antenna and GPS Antenna.

A Power fault is easy to detect as the unit fails to power up and no LEDs are displayed on the front of the unit. After checking that there is a good 12v supply to the Power cable of the AIT250/AIT1000, if the unit continues to not power up correctly, then you should assume that the unit has an internal power related fault and return it to Digital Yacht for repair.

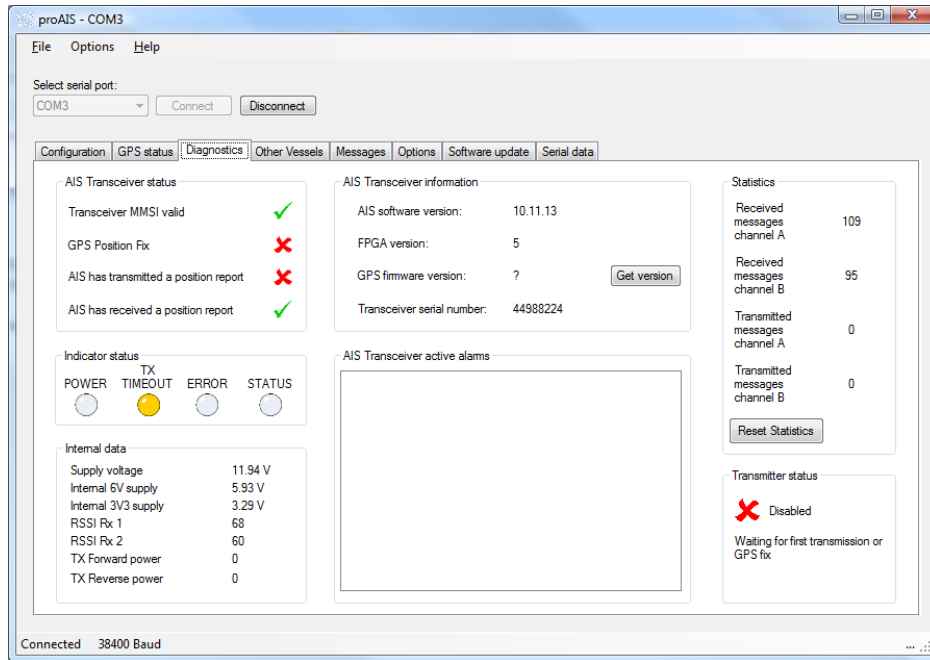
A VHF antenna failure will cause all AIS reception and transmission to stop and after a close visual inspection of all joints and connections in the VHF cable, the best way to prove if the antenna is at fault is to temporarily swap it for a known good antenna. The VHF antenna connection on the AIT250/AIT1000 is a BNC connector and it may be necessary to fit a BNC to TNC or BNC to PL259 (VHF) adaptor in order to connect another VHF antenna.

If the VHF antenna that you have fitted to the AIT250/AIT1000 has a cable that is removable from the antenna, then you can check the cable for continuity and isolation using a Multi-Meter set to measure resistance. Simply follow this procedure;

- 1) Disconnect the VHF antenna coax cable from the AIT250/AIT1000
- 2) Disconnect the VHF antenna from the coax cable
- 3) Using a wire or other metallic (conductive) object short together the inner and outer connections at one end of the coax cable
- 4) Walk to the other end of the cable and measure the resistance between the inner and outer connector of the coax cable – you should measure < 1ohm if the cable continuity is good
- 5) Now remove the wire or other metallic object that was shorting together the inner and outer connections and repeat the resistance test – this time you should measure >10 Megohms (10 million) if the isolation of the cable is good

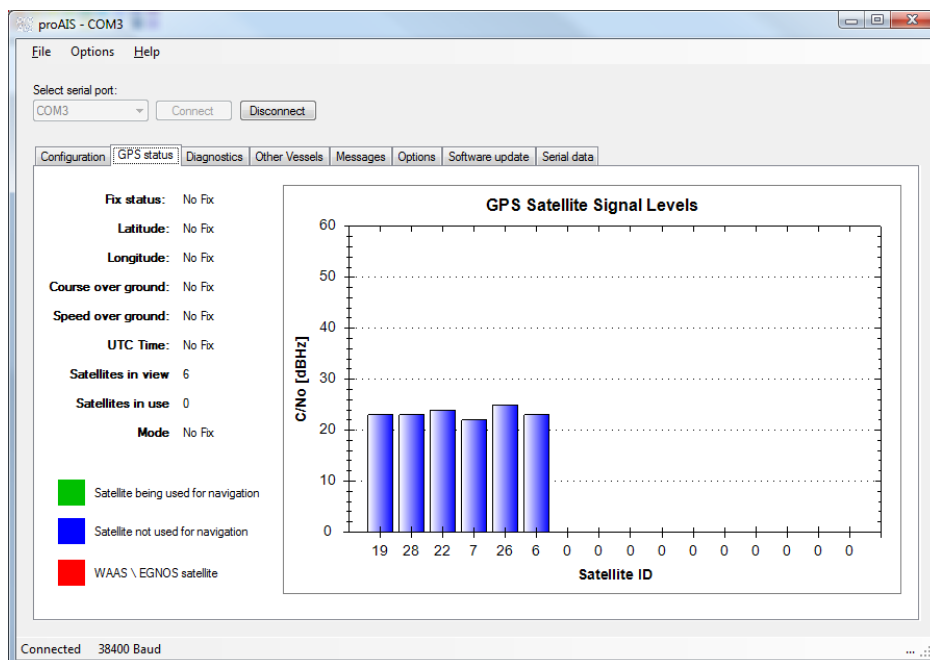
If both of the resistance values were correct, then the cable is good and the fault must lie with the VHF antenna or the AIT250/AIT1000.

The most common cause of the AIT250/AIT1000 unit not transmitting it's position (Yellow LED continuously on) is no GPS fix. If you can connect a PC to the AIT250/AIT1000 use the supplied proAIS software (latest version available from www.digitalyacht.co.uk) to find out what the problem is. The Diagnostics Tab of proAIS, see image below, provides a lot of useful information on what is happening inside the AIT250/AIT1000.



Pay particular attention to the Internal data Voltages in the lower left corner of the screen, the Receiver Signal Strength Indicators (RSSI) of the dual channel receiver and the Forward and Reverse Power of the transmitter – consult the Full Instruction Manual of the AIT1000 for more information on these values.

If the AIT250/AIT1000 is not receiving a GPS fix, then the most common cause is low or no GPS signals being received, which can be seen on the GPS Status Tab or proAIS – see image below.



All of the GPS signals should be >25 and will be green in colour if good enough for navigation. The image above was actually taken with no antenna connected.

If the GPS signals are low or non-existent, a simple voltage reading can be taken at either end of the GPS antenna cable to see if the 5v supply voltage to the antenna is present. The following process should be followed;

- 1) Disconnect the TNC connector of the GPS antenna cable from the AIT250/AIT1000
- 2) Using a Multi-Meter set to measure DC voltage, see if there is 5v signal between the inner and outer connector of the AIT250/AIT1000 TNC connector as shown in the image opposite
- 3) If there is no 5v signal, then the AIT250/AIT1000 must be assumed to be faulty
- 4) If there is a 5v signal, reconnect the TNC connector at the AIT250/AIT1000 and go to the GPS antenna end of the cable
- 5) Disconnect the GPS antenna and repeat the 5v measurement in to the cable as shown in the image opposite
- 6) If there is no 5v signal, the cable (or a connection in the cable) must be assumed to be faulty
- 7) If there is a 5v signal, the GPS antenna must be assumed to be faulty

