



SRT Marine

User guide

SRT-MTB[©] proAIS Application



SRT Marine

User guide

SRT-MTB[©] proAIS Application

GENERAL WARNINGS

All marine Automatic Identification System (AIS) units utilise a satellite based system such as the Global Positioning Satellite (GPS) network or the Global Navigation Satellite System (GLONASS) network to determine position. The accuracy of these networks is variable and is affected by factors such as the antenna positioning, how many satellites are used to determine a position and how long satellite information has been received for. It is desirable wherever possible therefore to verify both your vessels AIS derived position data and other vessels AIS derived position data with visual or radar based observations.

The proAIS software is intended for use as an installation and configuration tool. The application is not a navigation tool and should not be used as such.

LICENSING

IMPORTANT: In most countries the operation of an AIS unit is included under the vessels marine VHF licence provisions. The vessel on to which the AIS unit is to be installed must therefore possess a current VHF radiotelephone licence which lists the AIS system and the vessel Call Sign and MMSI number. Please contact the relevant authority in your country for more information. In accordance with a policy of continual development and product improvement the SRT-MTB hardware and software may be upgraded from time to time and future versions of the SRT-MTB may therefore not correspond exactly with this manual. When necessary upgrades to the product will be accompanied by updates or addenda to this manual. Please take time to read this manual carefully and to understand its contents fully so that you can install and operate your AIS system correctly. Information contained in this manual is liable to change without notice. Software Radio Technology plc disclaims any liability for consequences arising from omissions or inaccuracies in this manual and any other documentation provided with this product.

DISCLAIMER

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

This software uses components and source code developed by other companies or groups.

Microsoft .Net Framework V2.0:
Copyright © 2005 Microsoft Corporation

ZedGraph Graphing component dll (<http://zedgraph.org>):
Provided under the GNU Lesser General Public License

All trademarks mentioned in this document are the property of their respective owners.
Copyright © 2006, Software Radio Technology plc



SRT Marine

User guide

SRT-MTB[®] proAIS Application

Contents

Installation guide	4
Prerequisites	4
Setup	4
Removal	4
User guide	5
AIS Connection	5
Static Data Tab	7
GPS Status tab	8
Diagnostics tab	8
Serial data tab	8
Software update tab	8
Other vessels tab	8
Troubleshooting guide	8



SRT Marine

User guide

SRT-MTB[©] proAIS Application

Installation guide

Prerequisites

The proAIS application is designed to operate with Microsoft Windows 200, XP and above. Recommended minimum system requirements are:

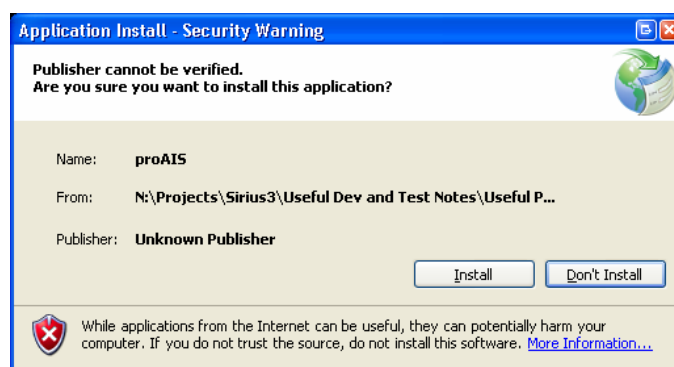
- Microsoft Windows XP SP2
- Display resolution of at least 1024 x 768
- At least one RS232 serial port (or USB to serial converter already installed*)

**If you are using a USB to serial converter please ensure this is fully installed before proceeding.*

This software uses the Microsoft .Net Framework V2.0. The framework will be automatically installed during setup if not already present on the system.

Setup

1. Insert the installation CD and locate the Setup.exe file.
2. Double click the Setup.exe file to begin the installation.
3. Follow on screen prompts to install the .Net framework if required
4. When the security warning below is displayed, select 'Install'



5. The application will install and launch automatically
6. A Start Menu folder and shortcut will be created with the name 'proAIS'. This short cut should be used to re-launch the application as required

Removal

The proAIS application can be removed at any time via the windows Control Panel 'Add or Remove Programs' tool.

SRT Marine

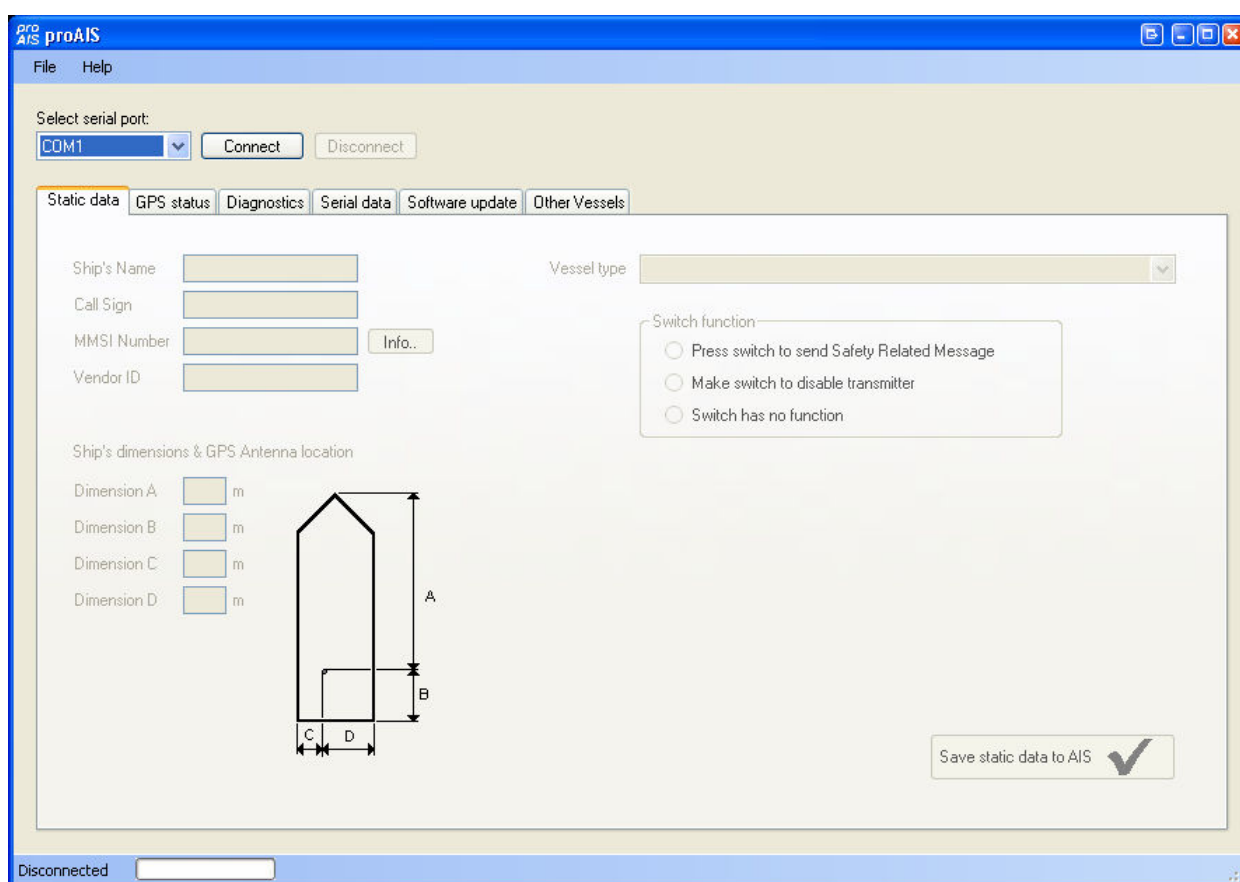
User guide

SRT-MTB[©] proAIS Application

User guide

AIS Connection

1. Launch the proAIS application by navigating to the 'proAIS' shortcut on the Start Menu.
2. The initial application screen will appear as shown below:



3. The application requires a serial connection to an SRT-MTB[©] transponder. Connect the transponder to an available serial port.
4. Select the serial port from the drop down menu, then click 'Connect':

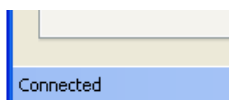


SRT Marine

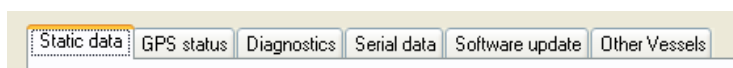
User guide

SRT-MTB[®] proAIS Application

5. Once a connection is established the application is ready to use. Connection status is indicated at the bottom left of the application window:



6. The functions of proAIS are arranged in a series of tabs. Each tab contains information relating to a particular aspect of the connected AIS transponder. Depending on the version of proAIS installed not all tabs shown below may be visible.



- **Static data tab**
 - Displays the 'Static data' for the connected AIS transponder. This includes the vessel's name, call sign, MMSI number and other fixed information
 - Allows editing of the static data
- **GPS Status tab**
 - Shows the status of the internal GPS receiver, including position fix data and satellite signal strength graph
- **Diagnostics tab**
 - Shows the status of key system diagnostics. Used to troubleshoot installation of the transponder and verify correct operation.
- **Serial Data tab**
 - Shows the raw NMEA serial data being generated by the transponder. Provides a facility to log this data to a file for later analysis.
 - Allows NMEA commands to be sent to the transponder
- **Software update tab**
 - Provides facilities to upgrade the transponder software from an update file.
- **Other Vessels tab**
 - Shows information about other vessels in the area received from the AIS transponder

Subsequent sections describe the functions of each tab in more detail.

SRT Marine

User guide

SRT-MTB[®] proAIS Application

Static Data Tab

This tab shows the current configuration of the AIS transponder and allows the configuration to be programmed during installation into a vessel.

When an un-configured AIS transponder is connected for the first time the display will be similar to that shown below:

The screenshot shows the 'proAIS - COM1' application window. The 'Static data' tab is selected, displaying various configuration fields:

- Select serial port:** A dropdown menu set to 'COM1', with 'Connect' and 'Disconnect' buttons.
- Static data | GPS status | Diagnostics | Serial data | Software update | Other Vessels** (tabbed interface)
- Ship's Name:** An empty text input field.
- Call Sign:** An empty text input field.
- MMSI Number:** A text input field containing '000000000'.
- Vendor ID:** An empty text input field.
- Vessel type:** A dropdown menu set to '37 = Vessel - Pleasure craft'.
- Switch function:** A group box containing three radio button options:
 - Press switch to send Safety Related Message
 - Make switch to disable transmitter
 - Switch has no function
- Ship's dimensions & GPS Antenna location:**
 - Dimension A: m
 - Dimension B: m
 - Dimension C: m
 - Dimension D: m
- Diagram:** A schematic diagram of a vessel's hull cross-section with dimensions A, B, C, and D indicated by arrows.
- Save static data to AIS:** A button with a green checkmark icon.

The status bar at the bottom left of the window indicates 'Connected'.

Configuring the transponder

To configure the transponder all of the data fields must be completed and saved to the AIS.



CAUTION:

For security reasons the MMSI of the vessel cannot be changed once programmed. Do not programme the MMSI unless you are certain you have the correct information. Please check the number entered carefully. If the MMSI programmed is incorrect the AIS transponder will need to be returned to the supplier for factory reset.



SRT Marine

User guide

SRT-MTB[®] proAIS Application

Configuring the transponder continued...

Enter the vessels information in the appropriate box:

- Ship's name - enter the name of the vessel (20 characters maximum)
- Call Sign - enter the vessel's radio call sign (7 characters maximum)
- MMSI number - enter the vessel's Maritime Mobile Service Identity number
- Enter the vessels dimensions as follows
 - Dimension A - distance from bows to GPS antenna location to the nearest meter
 - Dimension B - distance from the GPS antenna location to the stern to the nearest meter
 - Dimension C - distance from the port side to the GPS antenna location to the nearest meter
 - Dimension D - distance from the GPS antenna to the starboard side to the nearest meter
- Select the most appropriate vessel type from the drop down menu.



CAUTION:

If no MMSI is entered (MMSI is set to 000000000) then the AIS transponder will operate in receive only mode. The vessels own position will not be transmitted. An MMSI must be entered to allow the AIS transponder to transmit its own position to other vessels.

- When you have entered all of the vessel's data click the 'Save static data to AIS' button to programme this configuration into the AIS transponder:

- A warning will be displayed asking you to verify the MMSI number. Please check the number displayed is correct before proceeding. If the number is incorrect click the 'No' button to cancel programming of the MMSI:



- Click the 'Yes' button if the MMSI is correct
- The static data tab will be updated to show the newly programmed vessel information. The MMSI number will be displayed with a grey background to indicate that it has been programmed and cannot be changed.



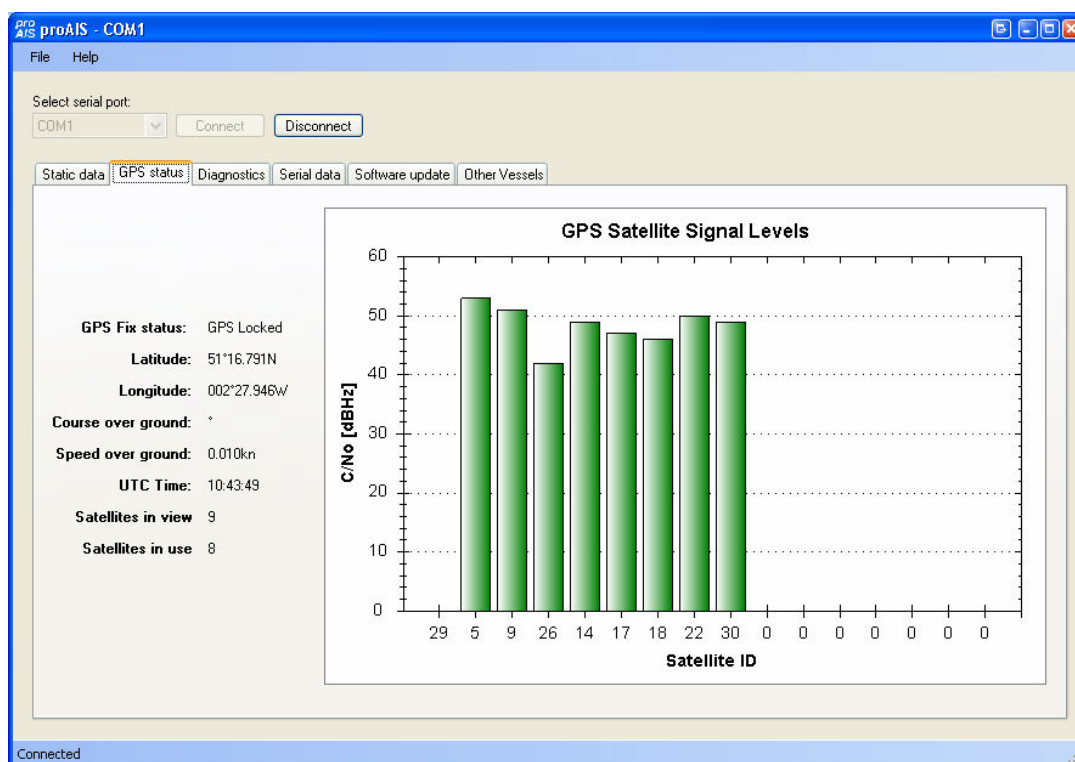
SRT Marine

User guide

SRT-MTB[©] proAIS Application

GPS Status tab

This tab shows the status of the internal GPS receiver. If the GPS receiver has position fix then the current position, speed and course are shown. A bar chart of satellite signal strength is also provided.



Satellite signal strength bars are shown in green for satellites that are currently being used for navigation. Blue signal strength bars are used to show satellites not currently being used for navigation. It is normal for the graph to display a combination of green and blue bars.

The information on this tab is intended for use during installation of the AIS transponder in order to verify connection of the GPS antenna.

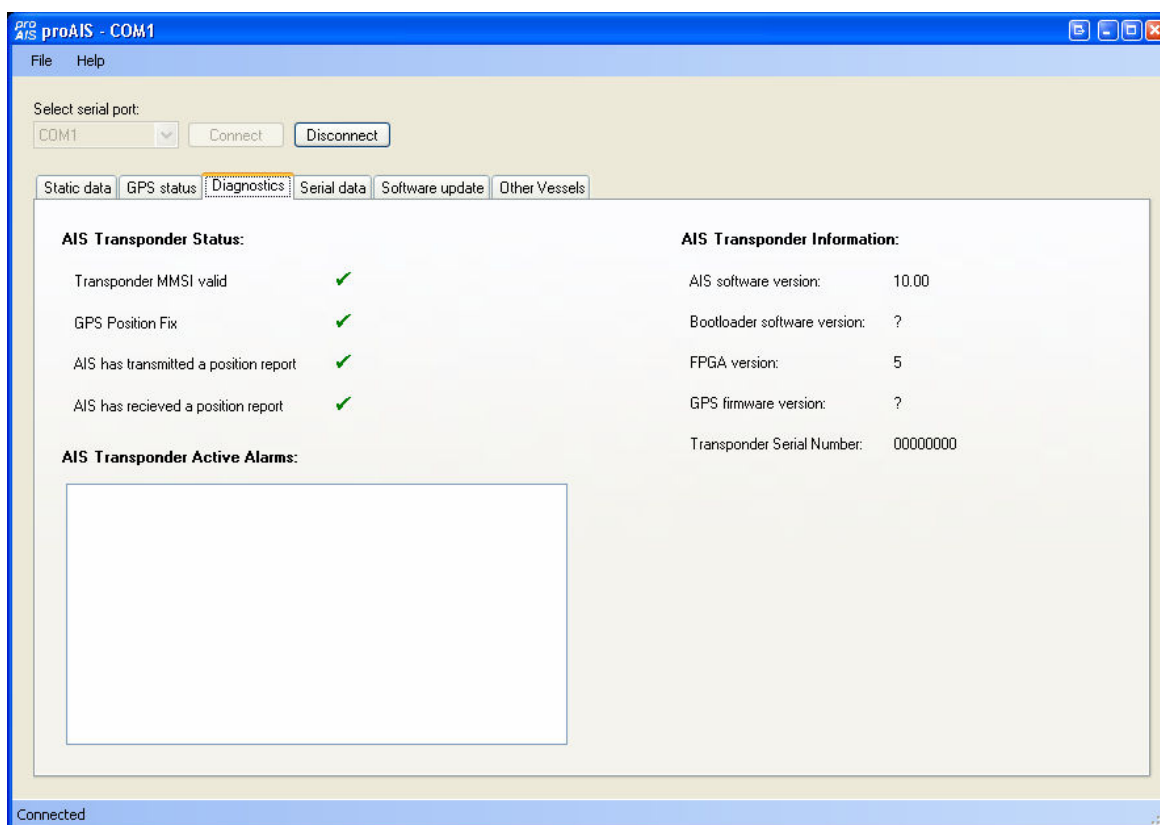
SRT Marine

User guide

SRT-MTB[®] proAIS Application

Diagnostics tab

The diagnostics tab shows key status information from the AIS transponder. This information can be used to quickly verify that the transponder has been installed correctly and is operational.



AIS Transponder Status

- A tick next to the items in this area indicates correct operation.
- If a red cross is shown then some action may be required:
 - Transponder MMSI valid has a red cross - check the MMSI of the unit is configured by selecting the 'Static Data' tab and verifying that a valid MMSI has been entered. If the MMSI is 000000000 then it has not been programmed.
 - GPS position fix has a red cross - the GPS has not acquired a position fix. Please allow up to 5 minutes for a fix to be acquired. If the red cross is still present check the GPS antenna is correctly connected and has a clear view of the sky.
 - AIS has transmitted a position report has a red cross - the unit has not yet transmitted it's position. Please allow up to 5 minutes after GPS fix has been acquired for the green tick to appear. If the red cross is still present after this time please refer to the active alarms section below. The AIS will not transmit unless it has acquired GPS fix and has a valid MMSI programmed



SRT Marine

User guide

SRT-MTB[®] proAIS Application

- AIS has received a position report - a position report from another vessel has been received. If there is no other AIS equipped vessel in the area the red cross will remain against this item. If other AIS equipped vessels are present and the red cross remains please check the VHF antenna connections.

AIS Transponder Active Alarms

Any active alarm messages generated by the AIS unit are shown here

- Note that alarms may take up to 1 minute to clear from this display once their source has been corrected
- It is normal for GPS related alarms to be displayed when the AIS is first switched on. These alarms will clear once GPS position fix is acquired.
- Please refer to the troubleshooting section for a description of each alarm message

AIS Transponder Information

This section shows technical information about the connected AIS transponder including software and firmware version information.



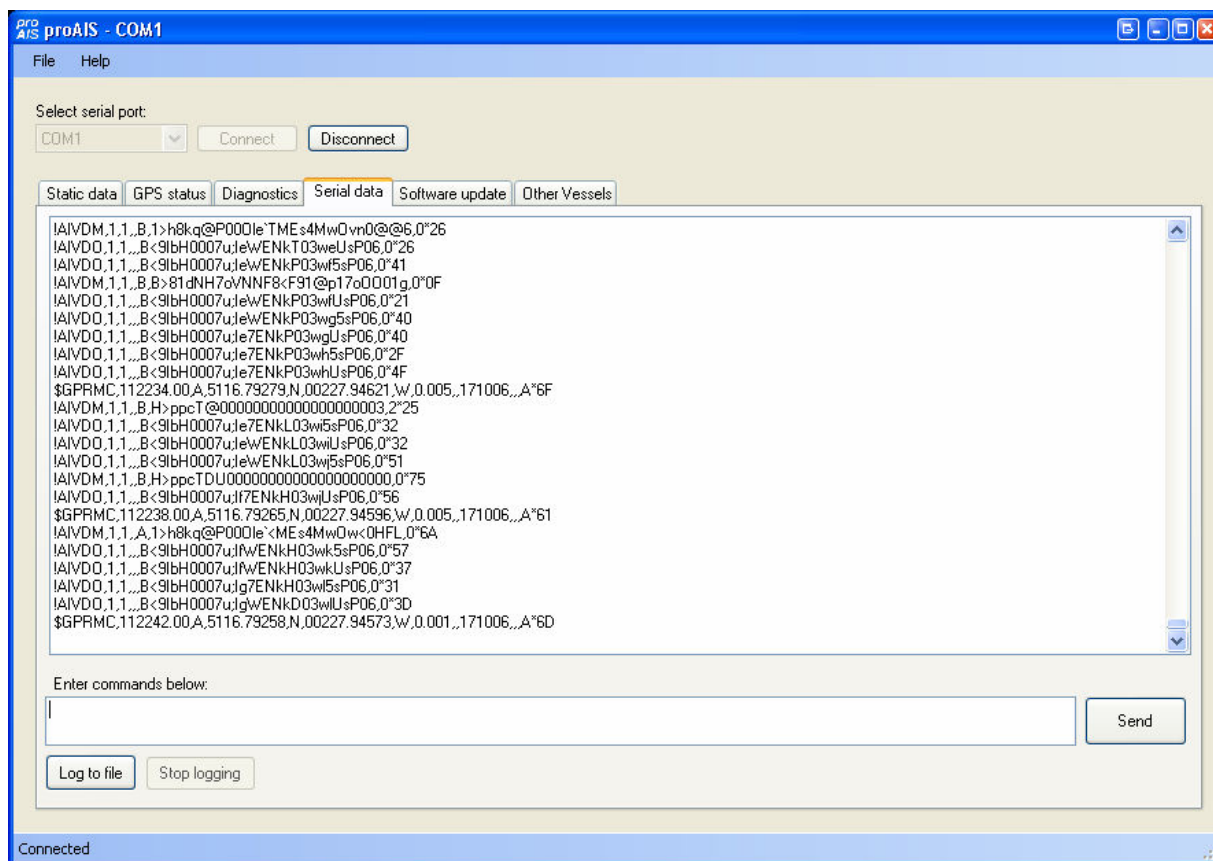
SRT Marine

User guide

SRT-MTB[®] proAIS Application

Serial data tab

This tab shows the raw NMEA 0183 serial data being output by the AIS. A typical display is shown below:



- NMEA command sentences can be sent to the unit by entering them in the lower text box and clicking the 'Send' button.
- Serial data can be logged to a file by clicking the 'Log to file' button and entering a file name and location in the dialog box.
 - Logging to file will continue if other tabs are selected after logging has been started
 - Logging to file will cease when the 'Stop logging' button is clicked

SRT Marine

User guide

SRT-MTB[®] proAIS Application

Software update tab

This tab provides the facility to update the AIS transponder's internal software.



CAUTION:

Only perform a software update using an update file intended for use with the SRT-MTB[®] product. Do not interrupt the power to the unit or disconnect from the PC during the update process unless instructed to do so by the proAIS application.

1. Click the 'Select update file' button and navigate to the update file. This will have the extension .hex
2. Click the 'Start update button'
3. Follow the instructions provided underneath the update progress bar.
4. You will be requested to power cycle the unit at two points in the process. Turn the power supply to the AIS off and back on again at these requests. Do not disconnect the serial connection to the PC.
5. Once the 'Update completed' is displayed the AIS is ready for use
6. Please verify the information shown on the static data tab is correct after any software update.



SRT Marine

User guide

SRT-MTB[®] proAIS Application

Other vessels tab

This tab shows information received from other AIS equipped vessels in the area.

- The MMSI of each vessel is shown.
 - Vessels equipped with Class A AIS have the MMSI displayed in black text.
 - Vessels equipped with Class B AIS have the MMSI shown in blue text
- The name and call sign of each vessel is shown
 - Due to the way AIS operates this information may take some time to appear
- The speed in knots, course in degrees, decimal latitude and longitude are shown for each vessel
- The approximate distance to each vessel is shown when the connected unit has a GPS fix. Please note that this is an **approximate** distance for indication only.
- The class of the AIS equipment on each vessel is displayed as A or B
- Columns can be sorted into ascending or descending order by clicking on the column heading.

MMSI	Name	Call Sign	Speed (kn)	Course	Latitude	Longitude	Distance (nm)	Class
0			0.1	158.3	50.85972	-1.12547	56.57	A
209084000	GAS LEGACY	C4EL2	0	246	50.84167	-1.3325	50.26	A
210286000			0	0.1	50.83853	-1.32951	50.46	A
219047000			0	0	50.71783	-1.05743	63.08	A
227273000	NORMANDIE	FNND	0	135	50.81133	-1.097	58.89	A
232001340			1.5	53	50.72407	-1.48471	49.93	A
232002070			0	202.3	50.83438	-1.32361	50.78	A
232002163			10.6	249.3	50.75581	-1.38188	51.69	A
232003081	CITY OF CHICHESTER	MXGH3	12.1	249	50.76446	-1.34448	52.51	A
232003401	RED JET 3	MYKV3	0	20.3	50.76312	-1.2959	54.05	A
232003592			6.7	127	50.73034	-1.06989	62.28	A
232613000	NEDLLOYD HUDSON	MZER8	12.9	139.8	50.81726	-1.29678	52.19	A
234509000			3.9	317.6	50.74576	-1.51742	48.13	A
235000366			10.9	341.2	50.78661	-1.10762	59.28	A
235002514	ST CLARE	ZNNR5	10.7	70	50.77367	-1.1145	59.46	A
235003303			12.8	142.2	50.83599	-1.31331	51.06	A
235004650			9.9	76	50.4611	-1.31333	65.82	A
235006680			12.4	138	50.84786	-1.33743	49.91	A
235007472	FREEDOM 90	MLMJ9	0	98	50.785	-1.1	59.58	A
235007473	ISLAND EXPRESS	ZIRL9	0	47	50.73283	-1.1585	59.38	A
235012119			0.2	28.1	50.79132	-1.11433	58.92	A
235031241	TENAX	MKSF5	0.1	191.8	50.83453	-1.32342	50.78	A
235031616			0	0	50.79283	-1.1075	59.1	A
235031617	ST CECILIA	MFJT9	12.7	244	50.75933	-1.17433	57.99	A
235031622			25.8	221.7	50.76667	-1.12347	59.39	A
244210000			0	248	50.70718	-1.04522	63.82	A
247007000	COSTANZA WONSILD	ICWG	0	244.4	50.83772	-1.32837	50.52	A

Troubleshooting guide

Problem	Possible cause	Solution
General		
No AIS is detected	The AIS is not connected to the serial port selected from the drop down menu	Check the number of the serial port the AIS is connected to and retry
	The AIS is not powered	Check that the power supply is connected and switched on
	The serial cable is damaged or faulty	Try an alternative serial cable
Static Data tab		
No static data is displayed	The unit has not yet been configured	Follow instructions in the Static data section to configure the unit
The MMSI can not be changed	The MMSI has already been programmed	The MMSI can only be programmed once. If it is incorrect please contact your dealer.
The static data is incorrect	Data was entered incorrectly	Re-enter the static data and save to the AIS. The MMSI cannot be updated.
GPS tab		
No GPS position information is displayed (or graph shows only blue bars)	The unit has not acquired GPS fix	<p>Check the GPS antenna connections and power cycle the AIS unit.</p> <p>Check the GPS antenna location and make sure it's view of the sky is not obstructed</p> <p>Check the AIS installation manual against the specification of your GPS antenna</p>
	The GPS antenna is not correctly connected	
	The GPS antenna does not have a clear view of the sky	
	GPS antenna is unsuitable for use with AIS	
Diagnostics tab		
Red cross against a status item	Unit configuration or antenna connections	See Diagnostics tab section of this user guide for advice on each item
Active alarm shown: Position sensor fault OR SOG data fault OR COG data fault OR	The unit has not acquired GPS fix	<p>Wait at least five minutes for the unit to acquire GPS position fix</p> <p>Follow troubleshooting guide for GPS tab</p>
Active alarm shown: VHF Antenna VSWR fault	The VHF antenna is not connected or is not suitable for use with the AIS	<p>Check the VHF antenna connections.</p> <p>Check the AIS installation manual against the specification of your VHF antenna</p>



SRT Marine

User guide

SRT-MTB[®] proAIS Application

Problem	Possible cause	Solution
Active alarm shown: 12V Power supply fault	The power supply to the AIS is outside the specified range.	Check the power supply voltage to the AIS against that specified in the installation manual.
Active alarm shown: Channel A Noise fault OR Channel B Noise fault	The AIS cannot transmit because the background noise level is too high	Check the VHF antenna connections. Check the AIS installation manual against the specification of your VHF antenna. In very busy shipping channels this alarm may appear temporarily. This is normal operation for Class B AIS.
Active alarm shown with message not listed here	The VHF antenna is not connected or is not suitable for use with the AIS. AIS is faulty.	Check the VHF antenna connections. Check the AIS installation manual against the specification of your VHF antenna. Please contact your dealer.



SRT Marine

User guide

SRT-MTB[©] proAIS Application

Software Radio Technology plc (SRT) is at the forefront of technology innovation and for this reason, reserves the right to alter, without notice, the specification, design or conditions of supply of any product of service. Information provided by SRT is believed to be accurate and reliable. However, no responsibility is assumed by SRT for its use, nor any infringements of patents or other rights of third parties, which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of SRT. SRT operates to the ISO 9001-2000 standards. © Software Radio Technology plc 2006



Software
Radio Technology

Software Radio Technology plc
Wireless House
Westfield Industrial Estate
Midsomer Norton,
Bath BA3 4BS,
England, UK

Telephone: +44 (0)1761 409 500
Fax: +44 (0)1761 410 093

Email: sales@softwarerad.com
Web: www.softwarerad.com