Ais Decoder Help

This PDF Help file (56 pages) has been electronically created from the Windows Help distributed with AisDecoder .

Help can be viewed independently of AisDecoder by locating AisDecoder.chm in your Program Files\Aundale\AisDecoder\Help directory and clicking on it.

To print the entire help (approx 27 pages)	
1.	Highlight (click) Ais Decoder Help on Contents tab.
2.	Right-click and **Print**
3.	Select **Print the selected heading and all subtopics**.

To View/Print a PDF version click here

Getting Started

Ais Decoder has a large number of options to enable you to output decoded AIS data for your own purposes.
I would suggest you start by setting up the input so you can see you are receiving valid data
Once you can see valid data, try changing some of the options.
I have supplied a number of initialisation files which hold pre-set settings, these enable you to see how you can tailor the output to suit various requirements.

Overview

All ships over 300 tons as well as many smaller ships continuously transmit messages giving their position principally for collision avoidance.

These messages can be received by an AIS receiver, however to produce meaningful information they need decoding.

AisDecoder outputs meaningful information, in a variety of formats, by decoding the data output from a dedicated AIS receiver, or from a network

Features

The decoder will decode all the NMEA and AIS content of all 27 AIS message types (!AIVDM or !AIVDO) including many binary messages.

Input:	Serial or USB from AIS receiver, UDP from network, Log File
Input Filter:	AIS Message type, DAC, FI, ID, MMSI
Output:	Display, File, FTP, UDP
Output Frequency	As received or at Scheduled intervals
Output Filter:	Lat/Lon or any other decoded field

Output Formats: Text, CSV, HTML, XML, KML, KMZ, NMEA

Details

Decodes all 27 AIS message types
Also decodes 50 Binary message types
All fields are fully decoded
Input Logging with optional daily roll-over
NMEA input monitor
UDP and Serial (RS232) Input
Input filtering by AIS message type and/or binary message DAC/FI/ID
Some GPS NMEA sentences decoded (more to come)
Message Summary display
Dual Channel Output to File or UDP
Output display
NMEA or Formatted Output
Timed (Scheduled) Output by MMSI for Web Sites
Decoded CSV Output for import into Excel
User selectable fields
Displays Ships on Google Earth
KML or KMZ Output to Google Earth
XML Output to Google Maps
HTML output to web site
Automatic FTP upload to web site
Output Format may be tailored to individual requirements
Output Filtering by individual AIS Message Fields
Range filtering by any Field value (for example Area by Latitude and Longitude)
Filters NMEA AIS log files by all message types and all AIS fields
Reads ShipPlotter spnmea log files
Can be run like a Server

Quick Start

Having downloaded the installation file, AisDecoder_setup_x.x.x.x.exe, run this file.
Click Start > Programs > Ais Decoder > Ais Decoder

The Control/Stats window will be displayed.
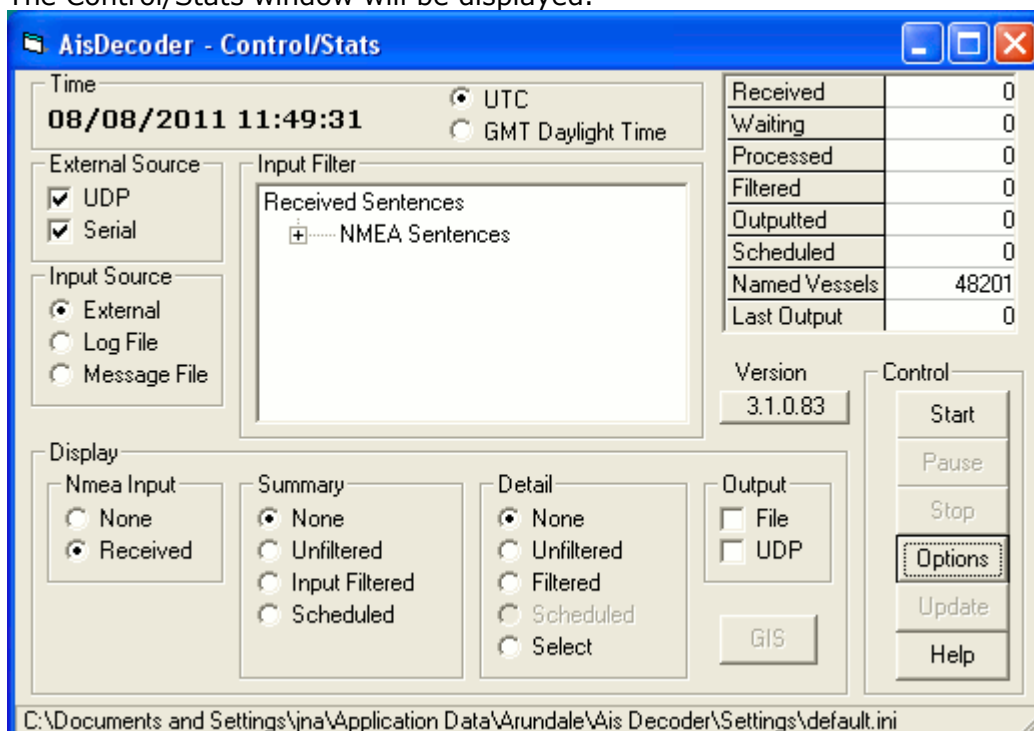
Tick the External Source from where your PC will be receiving data.
If USB tick Serial
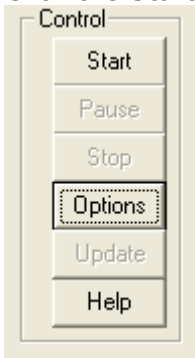
Then click on Options to display the Options Window.
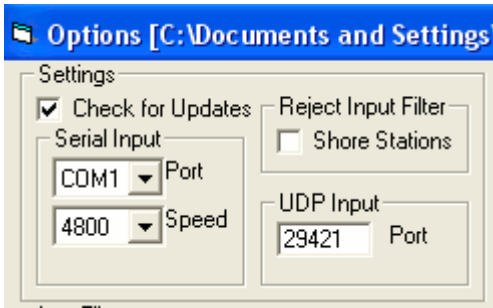
Configure the Input Source you have selected.
For more information see Network , Serial or USB Data
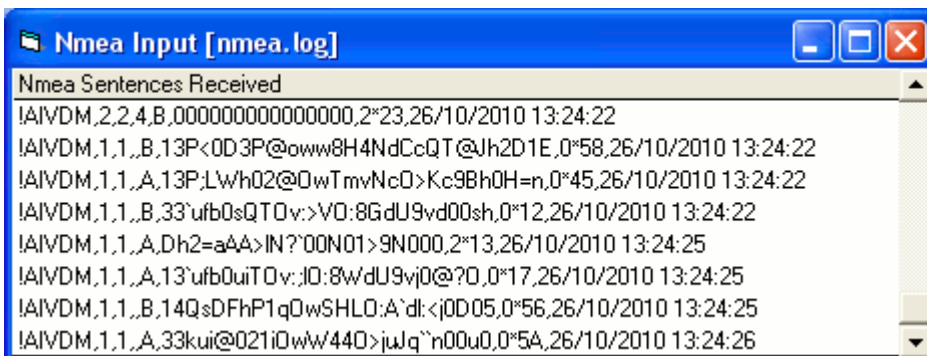
On the Control/Stats Window ensure you have ticked the configured External Source of your data
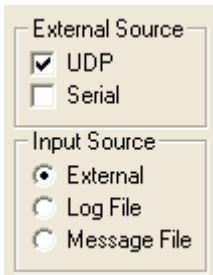
Click the Start button

Two additional windows will be displayed, the NMEA Input Window and the message Summary Window.

Summary

Sentence	MMSI	Message Type	DAC	FI	ID	Vessel Name	Comments
!AIVDM	220514000	1				ORASUND	Position Report Class A
!AIVDM	255816000	3				J.AUGUSTUS ESSBERGER	Position Report Class A (Response to interrogat
!AIVDM	248693000	3				M/T ARAL	Position Report Class A (Response to interrogat
!AIVDM	246457000	1				WESTGARD	Position Report Class A
!AIVDM	002320789	4					Base Station Report
!AIVDM	002320709	4					Base Station Report
!AIVDM	002320780	4					Base Station Report
!AIVDM	255816000	3				J.AUGUSTUS ESSBERGER	Position Report Class A (Response to interrogat
!AIVDM	371793000	1				HARLEQUIN	Position Report Class A
!AIVDM	235077712	5				UKD ORCA	Ship and Voyage Report {Msg ID = 0, part 1 of
!AIVDM	235077712	5				UKD ORCA	Ship and Voyage Report {Msg ID = 0, part 2 of
!AIVDM	235068575	1					Position Report Class A
!AIVDM	235077712	1				UKD ORCA	Position Report Class A
!AIVDM	235249000	3				PRIDE OF HULL	Position Report Class A (Response to interrogat
!AIVDM	244281000	1				DUTCH FAITH	Position Report Class A
!AIVDM	249594000	1					Position Report Class A
!AIVDM	220514000	1				ORASUND	Position Report Class A
!AIVDM	304010331	1				BEATRICE	Position Report Class A
!AIVDM	255816000	3				J.AUGUSTUS ESSBERGER	Position Report Class A (Response to interrogat

The Nmea Input Window displays the data being received on your selected Input Source
The Summary Window displays a summary of the decoded data for each sentence received.

Click on any line (Sentence) on the Summary Window to see the fully decoded data for the Sentence.

Detail

| Description	Value	Value Description
Creation Time	26/10/2010 13:53:10	
Nmea Sentence	!AIVDM,2,2,7,A,EDSI3kIU;	
Sentence Type	!AIVDM	Ais Message
Ais Message		88 bits (15 6-bit words)
Fragments in this message	2	
Fragment No	2	
Sequential Message ID	7	
Radio Channel	A	
Payload	EDSI3kIU;85C300	424 bits (53 8-bit words)
Fill bits * CRC check	2*70	
Received Time	26/10/2010 13:52:44	
Vessel Name	PRIDE OF HULL	
AIS Message Type	5	Ship and Voyage Report
Repeat Indicator	0	Repeatable
MMSI	235249000	United Kingdom of Great Britain and Northern Irel
AIS Version	0	Compliant with ITU-R M.1371-1
IMO Number	9208629	
Call Sign	ZNNK8	5 characters
Vessel Name	PRIDE OF HULL	13 characters
Ship Type	69	Passenger-no additional information
Dimension to Bow	18	meters
Dimension to Stern	197	meters
Length	215	meters, (calculated)
Dimension to Port	16	meters
Dimension to Starboard	16	meters
Beam	32	meters, (calculated)
Position Type Fix	1	GPS
ETA month	10	
ETA day	26	
ETA hour	04	
ETA minute	25	
Draught	6.1	meters
Destination	HULL-EUROPOORT-HULL	19 characters
DTE	0	Data Terminal Ready
Spare	0	1 bits

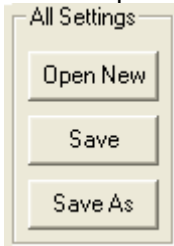Congratulations, you are now decoding AIS data.

Google Earth View

To Display the Ships on Google Earth
Install Google Earth
In the Control/Stats window click the Options button
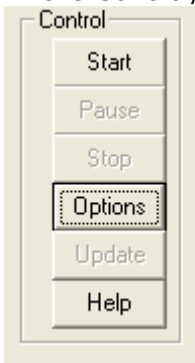
In the Options window click the Open New button

Browse to the directory shown on the bottom of the Control window, select the Settings folder, Open the file GoogleEarth.ini
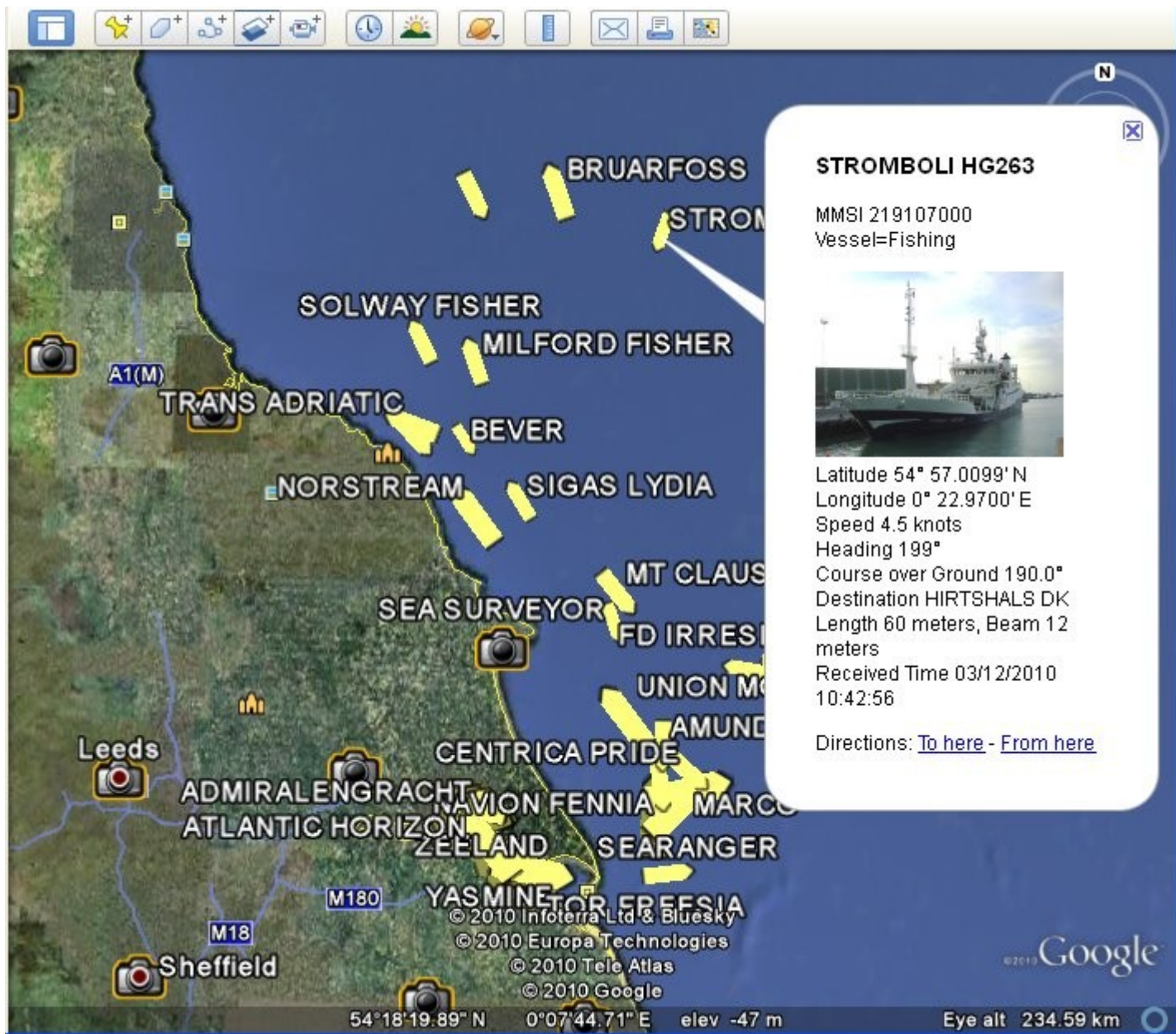Close the Options window (Click on the X)

Within one minute all vessels data received since you started the decoder will be available to view in Google Earth and the GIS button on the Control/Stats window will be available (not Greyed out).

Click the GIS button
Any ships, from which you have received data, will be displayed on Google Earth.

Example of Google Earth

STROMBOLI HG263

MMSI 219107000
Vessel=Fishing

Latitude 54° 57.0099' N
Longitude 0° 22.9700' E
Speed 4.5 knots
Heading 199°
Course over Ground 190.0°
Destination HIRTSHALS DK
Length 60 meters, Beam 12 meters
Received Time 03/12/2010 10:42:56

Directions: To here - From here

Physical Connection

This is the connection between your data source and your PC.

AisDecoder will accept Serial, Network or USB.
The Network data could be from an AIS receiver, from the internet, from your local PC or local network.

See also Serial Data, Network Data, USB Data

Serial Data Input

Connect your Ais Receiver to a Serial Port on your PC
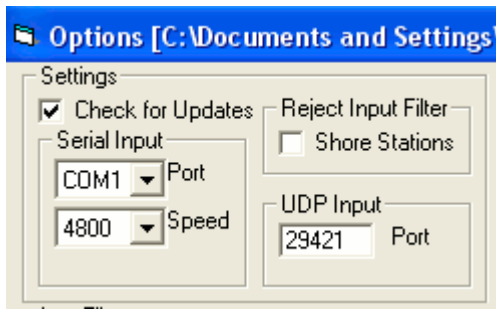
On the Options Display set the Port No you have connected your receiver to, which is COM1 in the above example.
For AIS set the Speed to 38400

Network Data Input

The Network Protocol must be UDP, TCP will not work.

Set Options > UDP > Port to the port number on which you are receiving UDP data.

If you are receiving input from an AIS Network Receiver, consult your receiver manual on how to set up an output port on your receiver. The input port on AisDecoder must be the same.

If you are receiving network data from the internet, the port number must be the same as is being sent by the Server supplying you the data.

If you are receiving UDP data direct from your PC, for example from another program (eg ShipPlotter), the other program should be set up to send you UDP data to IP address 127.0.0.1 The port numbers must be the same on both programs.

USB Data Input

If your PC does not have a serial port, or your AIS receiver outputs USB data, you PC will be receiving the incoming data via USB.

If you have had to use a Serial to USB adaptor, the adaptor will have come with a USB Driver.

Otherwise your USB AIS Receiver will have come with a USB Driver.

USB Drivers are individual to the hardware device plugged into the USB port on your PC, they are extremely unlikely to be interchangeable.

The USB driver will make the output from the USB port on the PC appear to the PC as though the data is being received from a COM port. This is called a Virtual COM Port, because the COM port does not physically exist on the PC.

After you have plugged the USB device (Receiver of Serial.USB adaptor) into your PC you will set up a COM Port, for example COM12.

Having set up this Virtual COM Port, you must configure the Serial Port on AisDecoder to the same port number.

Functional Description

There are two main windows which allow you to alter the behaviour of the decoder.

- Control/Stats

- Start/Stops/Pauses the decoder
- Controls various display windows
- Displays various statistics
- Access the Options Window
- Options
  - Selects most settings
  - Saves/Retrieves frequent settings
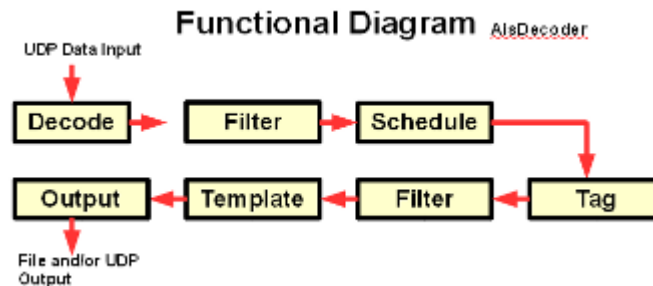
The incoming NMEA sentences are decoded. The input filter passes the AIS message types you have selected. If scheduled output is required, these messages are held in the scheduler buffer until the scheduled time.
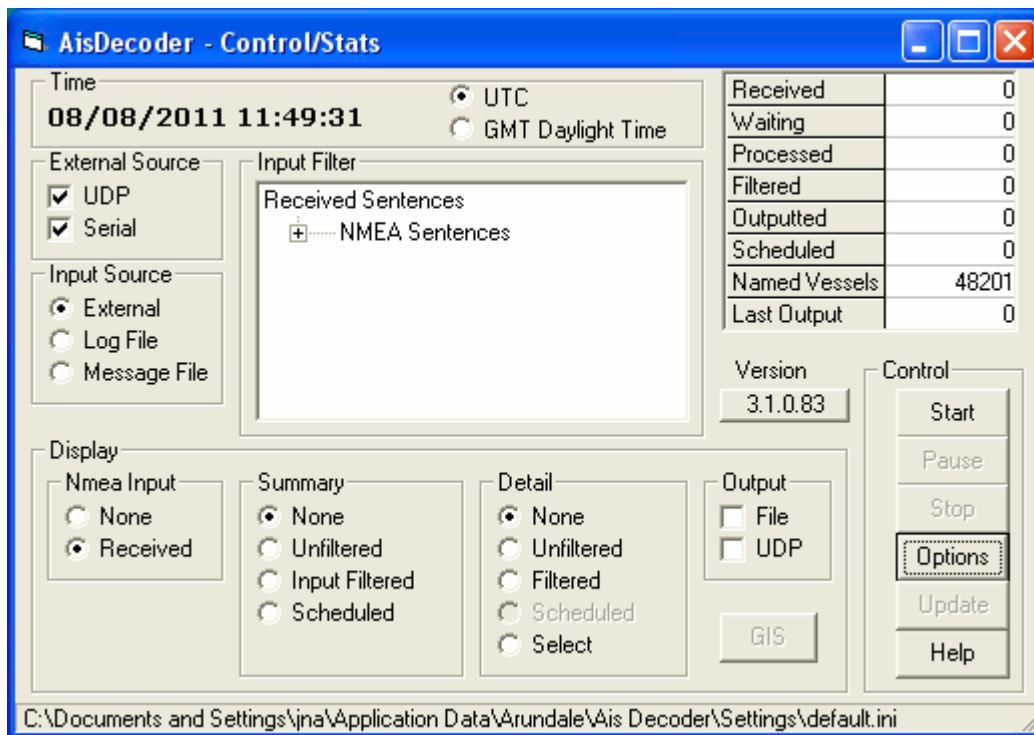
If specific AIS fields are required the value of the field is tagged.

If the value of the tag requires filtering, by having a valid range set, the range is validated, by the tag range filter.

The Formatter replaces the tag in the tag template file, with the tag value.

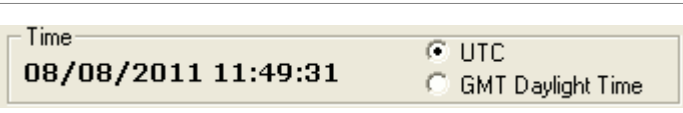The fully formatted and decoded sentence is output to a file, by UDP and/or displayed.
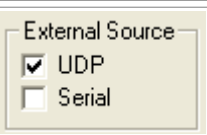
Control/Stats Window
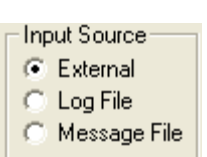

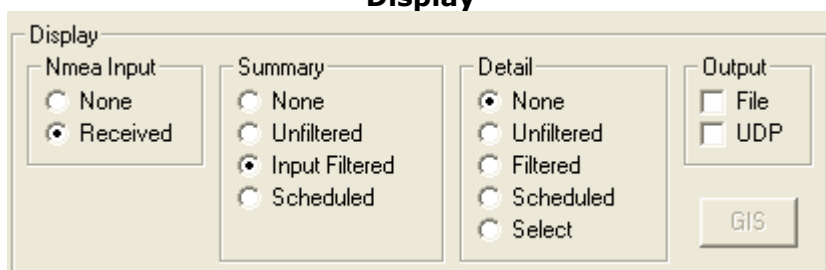| Control		
	Start	commences decoding NMEA sentences
	Pause	continues receiving sentences but holds them in a buffer until pressed again, when processing will recommence. This enables you to pause

		scrolling screens without loosing incoming messages
	Stop	stops all processing
	Options	displays the Options Window
[Control panel: Start, Pause, Stop, Options]	Update	will be enabled if there is a new update available for download
	Help	displays this file

Time		
[Time: 08/08/2011 11:49:31, UTC / GMT Daylight Time]	UTC	Display UTC time
	Local Time	Display Local Time

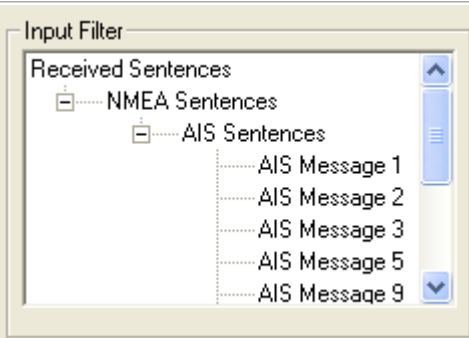| **External Source**		
[External Source: ☑ UDP, ☐ Serial]	UDP	decodes input from the UDP input port set on the Options Window
	Serial	decodes input from the Serial Com port set on the Options Window

Input Source		
[Input Source: ⦿ External, ○ Log File, ○ Message File]	External	selects the External Source(s) ticked above
	Log file	decodes input from a previously saved NMEA log file. You will be prompted to browse for the file after you press Start
	Message File	will decode input from a log file containing a dummy of one of each type of AIS message. This enables you to select in the Summary Window an AIS message you may not yet have received and set up any tags you require from the Detail window..

Display	
[Display panel: Nmea Input (None, ⦿ Received); Summary (None, Unfiltered, ⦿ Input Filtered, Scheduled); Detail (⦿ None, Unfiltered, Filtered, Scheduled, Select); Output (☐ File, ☐ UDP, GIS)]	
Nmea Input	displays the NMEA sentences before decoding in the Nmea Input Window

Summary	displays the Decoded message summary before input filtering, after input filtering or on being output from the scheduler in the Summary Window
Detail	displays all messages as they are being received or after filtering in the Detail Window. By clicking on a message in the summary display, the detail of the selected message only will be displayed. This will stop any display of message detail if previously selected
Output	displays the output currently being sent to either a file or to the UDP port
GIS button	displays the current Tagged Output file using the application associated with the file extension.

Input Filter	
	Displays a summary of the Input Filter

Version Button	
	Displays the current version, click to view version history

Statistics

Received	315207
Waiting	183
Processed	315024
Filtered	261322
Outputted	787923
Scheduled	16744
Last Output	0
Named Vessels	5749

Statistics Pane on Control/Stats Window	
Received	are the number of NMEA sentences entering the decoder. As each part of a multi-part AIS message consists of a separate AIS message, each part is counted separately
Waiting	are the number of messages being held in the receive buffer awaiting decoding

Processed	are the number of incoming NMEA sentences which have been decoded
Filtered	are the number of NMEA sentences that have been accepted by the input filter
Scheduled	are the number of sentences currently being held in the Scheduler buffer, these will be output when the next scheduled time interval is reached
Outputted	
Last Output	are the number of different MMSI's that were last output by the Scheduler
Named Vessels	are the current number of MMSI's that have a vessel name associated with them that will be used to put a name to a MMSI, if required, on outputting the MMSI

Nmea Input Window
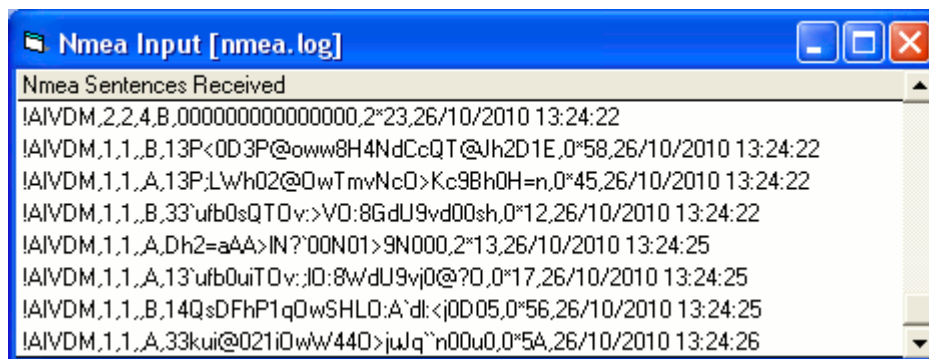
The Nmea Input window displays the NMEA sentences before decoding.

The NMEA sentence has a time stamp appended by Ais Decoder. This time is obtained from the PC's clock. You may set whether or not you wish to have the time stamp appended to the NMEA input log file.

See also Input Log File

Summary Window

The Summary window will display the Decoded message summary before input filtering, after input filtering or on being output from the scheduler, dependent on the selection in the Control/Stats Window.

If you click on any line, the Detail Window for the selected sentence will be displayed.

Detail Window

As well as displaying the detailed decoding of AIS messages this window is also used to

- Select a AIS message Field for Output (Tagging)
- Select a NMEA sentence word for Output
- Saves the entire contents of the Window as CSV text

Messages can be displayed as they are being received or after filtering or be selecting an individual message on the Summary Window.

If you **LEFT** click on any cell, this Field is selected for tagging.

If you **RIGHT** click on the detail display, a CSV copy of the complete window will be placed on the PC's clipboard, enabling you to save the details to Excel, Word, a file or any other program you wish.

Notes

The Vessel Name preceding the AIS Message Type, is the name that has been cached by the AisDecoder. This is the name you should select for inclusion in any output. See Vessel Names for further information.
This is the only field which may not actually be encoded within the displayed name sentence and AIS message.

GIS Button

Pressing the GIS button, will display the current Tagged Output file using the application associated with the file extension.

For example, if the output file extension is .KML, Google Earth will be used to display the output file, provided KML is set as the default program to run using explorer.

If the current output file was an HTML file, the current default browser will be used to render the HTML file.

The button is only enabled after a new Tagged file has been created after the Start button has been

pressed. It is also disabled temporarily during creation of a new output file by the Scheduler.

All Tags will be listed in the Output Tags and Range list. This shows a list of those you will most probably want to output for GIS. Note for all vessels the corresponding Field Tag list will contain approx 50 Tagged Fields.

See also Google Earth

Options Window

All settings can be saved in a Settings file. This includes the settings on the Control/Stats Window.
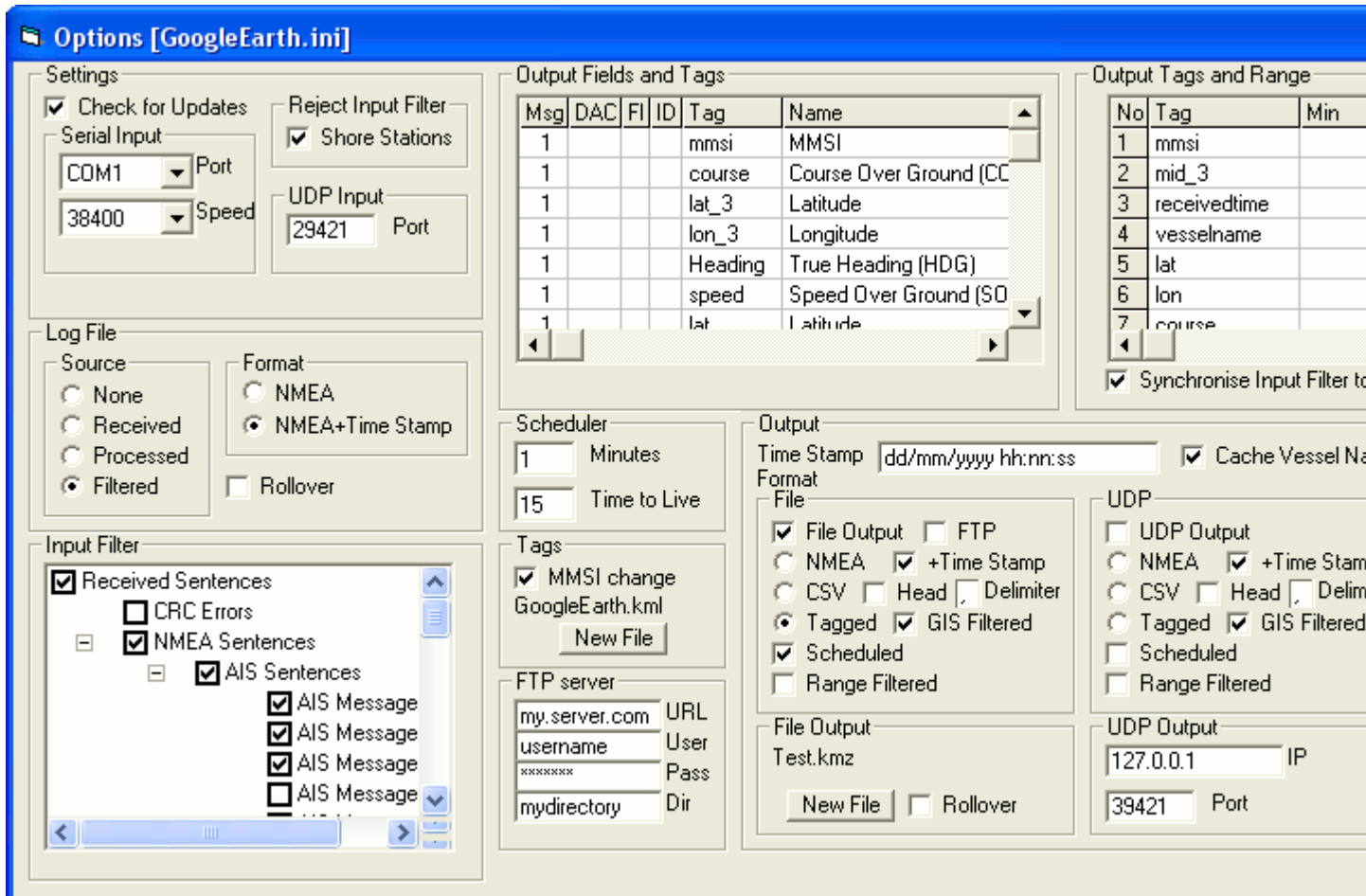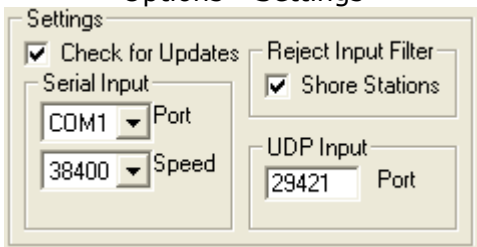
Options Window - Sections	
Settings	Change miscellaneous input settings
Log File	Change how the input Nmea data is logged
Input Filter	Select the message filter settings prior to decoding
Output Fields and Tags	Select the individual message fields to be output
Output Tags and Range	Select the Range of values for any decoded field to output
Scheduler	Set how often the latest value of the selected fields will be output
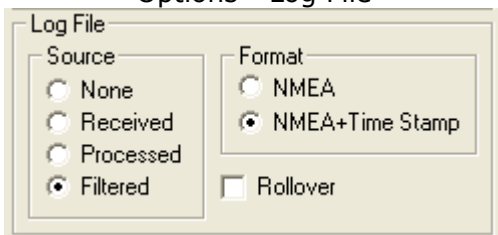
Tags	Select the template file to be used to output the selected fields
FTP server	Sets the Web server to which an output file is to be sent.
Output	Set the type of file and the format to output
All Settings	Opens and or Saves all AisDecoder settings

Options - Settings

Options - Settings	

Check for updates	will check my website on start-up, to see if a later version of AisDecoder has been placed on the Web Server. This may not have a later version number if the changes are minor.
Reject Shore Stations	will reject any MMSI's starting with 00
UDP Input	the input port that will be used for UDP input
Serial Input	Sets the serial port and speed. For AIS the speed will normally be 38,400 and for GPS NMEA normally 4,800

Options - Log File

Options - Log File	

Log File Source	determines whether Received, Processed or Filtered NMEA sentences are written to the log file (nmea.log).

Format	determines whether the logged NMEA sentences have a time stamp appended to the sentence. All incoming sentences have a time stamp (obtained from the PC's clock) appended, as the scheduler needs to know when the sentence was received. If NMEA only is selected, this time stamp is removed prior to being written out to the log file
Rollover	Messages are appended to the log file (nmea.log) as they are received. This is NOT reset each time you start the decoder, so the file can get very large. If you wish you can have the log file "Roll Over" to a new file at midnight every day. If you select Log File Rollover, the log file will be named nmea_yyyymmdd.log, where yyyymmdd is the current Year, Month, and Day

Notes

If the Input Source to the decoder is a file, the Log File Source must be Processed or Filtered for any output as no data will actually be Received.

If the Input Source is **not** a file, the log file name will be nmea.log and will be output in the \Logs folder

If the Input Source is a file, the log file name will be the same as the input file with .log appended and will be output to the same folder as the input file.

Options - Input Filter

For a NMEA sentence to pass through the filter, it has to reach the end of a number of checks. A message failing at one level will fail completely.
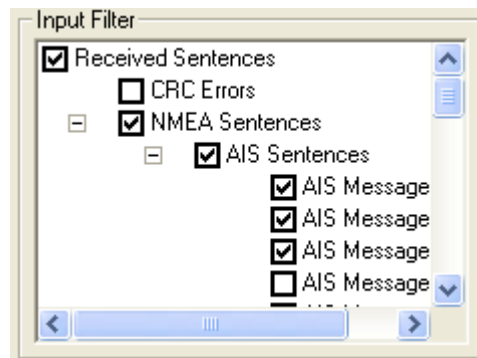
Each level is indented (to the right) from the previous level. When you tick one level, if there are any more levels, you will be presented with another set of tick boxes. If you do not tick any boxes on any one level, the whole of the level will be removed, in which case all messages ticked on the previous level will be accepted. You do not have to tick sub items - they are assumed to be ticked.

The complete Filter tree is displayed on the Control/Stats Window, with all redundant options removed.

Options - Output Fields and Tags

AIS messages consist of a number of fields, it is the value of these fields which AisDecoder is decoding. All these fields and/or values are displayed in the Detail Window. If you left click on any of these fields, you will be asked to create a Tag.

If you click OK you will see the Tag in both the Output Fields and Tags and the Output Tags and Range list.

By default he Tag name has _2 appended signifying it has the value in the second column of the Detail window. If you wished to have the descriptive name "Latitude" output and clicked the first column, the default Tag would be lat_1, Likewise if you wished the formatted Latitude "53° 36.9981' N" to be output and clicked the third column, the default Tag would be lat_3.

The same default Tag name can be generated by differing AIS message types, only you know whether this is the required behaviour. For example Latitude is not necessarily the position of a vessel, it could be defining an area (see AIS message type 22).

It is more likely you will wish to have the latest value of Latitude to be Output when the vessels position is available from more than one message type (see AIS message types 1,2,3).

In this case you will need to set a Field Tag for all three message types (1,2 and 3), in each case give the Tag the same name say "lat". In this case there will be three separate entries in the Fields an Tags table, but only the one in the Tags and Range table. You can rename the Tag name before (but not after) you click OK in the Input Field box above.

To delete a Field Tag, click on the Tag in the Fields and Tags list.
You cannot edit the tag, you must delete and re-create the Tag.
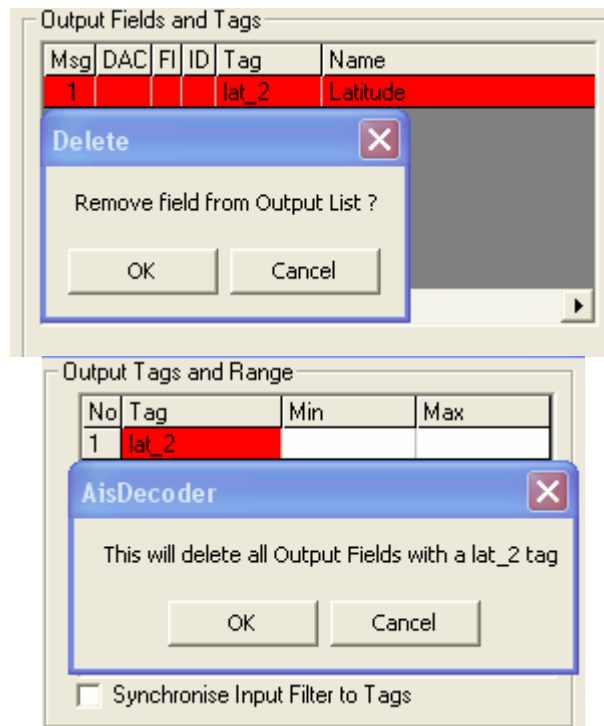
All differing Tags you have created in the Field and Tags list, will be put in the Output Tags and Range list.

Options - Output Tags and Range
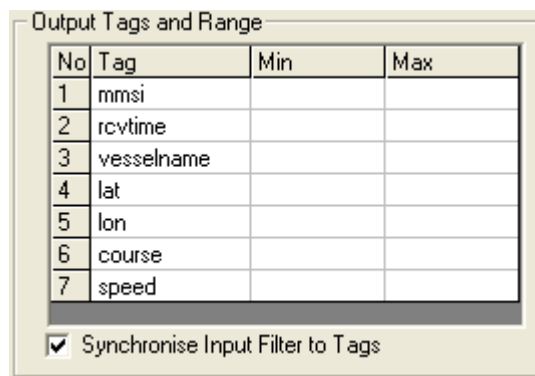
You can delete an Output Tag and all Fields with the same Tag, by clicking on the Tag name in the Output Tags and Range list.

You can set a valid output range for any Tag.
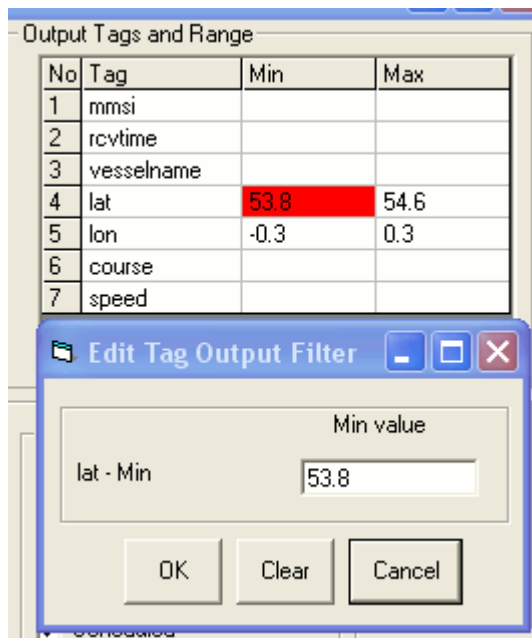
Click on the Min or Max cell for the Tag for which you wish to filter the range.
Enter the Minimum, Maximum or both for the Tag.
If Range Filtering is selected as an Output Option, only those MMSI's passing the range check will be output.
If any range is blank, the range check will pass.
You can insert the minimum or maximum Range value into a Tagged Output File.

If using tagged output, Synchronise sets the input filter to process all messages containing output tags and not process redundant messages (those without any tagged fields).

See also Options - Fields and Tags

Options - Scheduler
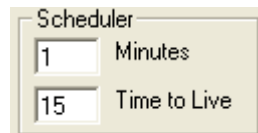
Options - Scheduler	
Minutes	are how often the Scheduler will output messages.
Time to Live	is the number of minutes messages remain in the Scheduler's buffer before removal

The output is triggered be the arrival of a new message into the Scheduler's buffer and NOT by the PC's clock.

The Scheduler outputs AIS messages in MMSI order.

If messages are duplicated, only the last received message is output.

If you are using the output of the decoder to display live vessel position data, the Time To Live will be the time the vessel will remain on the GIS display, after the last message from the vessel was received, before being removed from the GIS display.

See also MMSI change

Options - Tags

Options - Tags	
MMSI change	If ticked the latest Tag values will be output whenever the MMSI changes. This is the normal behaviour. If unticked the Tags/CSV will be output after each message rather than on change of MMSI. This is to allow, when reading a log file, to output the history of one vessel.
New File	Click to change the current is the Tag Template file used to create a Tagged Output File

The file name displayed is the Current Tag Template File name.

Options - FTP Server
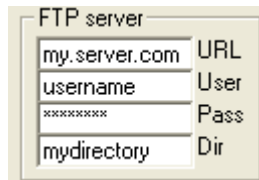
These are the settings to access your FTP server, normally to upload an Output File to your Web server.

URLOptions - FTP Server	
FTP	is the domain to access your FTP (web) server, example my.server.com
USER	is your login User Name
PASS	is your password to login to the FTP (web) server. This password is retained in the current initialisation file in an encrypted format. It is encrypted by using details of your PC as a key. If you use the initialisation file on a different PC you will must re-enter your password as the decrypted password, recovered from the initialisation file, will be incorrect.
DIR	is the directory below your root directory, where you wish the output file to be placed, example /uploads/ais Note this will probably be case sensitive (it depends on the Web server).

Options - Output

There are two Output "Channels". One outputs to a file, and the other to an IP address using UDP. The options for both are the same.

Options - Output	
[Time Stamp](#)	sets the output format for received and created dates, except the log file date stamp will always be the PC's regional setting.
Cache Vessel Names	Vessel Names will be retained between sessions. If a vessel name changes the new name will be used.
File/UDP Output	turns on the output
[FTP](#)	sends then Output File to FTP server (Website)
NMEA	NMEA sentences are output.
+ Time Stamp	the NMEA will be time stamped
[CSV](#)	All Tag values will be output in CSV format. If CSV output is selected with Tagged, you have the option of adding a header at the top of the file. This is useful if the CSV file is to be imported into [Excel](#). The default delimiter is a Comma. If the delimiter character is found within the value of a tag, the tag value will be quoted (within " "). GIS filtering is applied to CSV output as well as Tagged output.
[Tagged](#)	Tags in the Tag Template file are replaced with the Tag value before output
[GIS Filtering](#)	The MMSI will only be output if both a Latitude and a Longitude have a value for the current MMSI. A Special Tag <IconHeading> will also be created
[Scheduled](#)	The data will be output in batches at the Scheduled Interval
[Range Filtered](#)	The value of **all** Tags must be within the values set in the Output Tags and Range list for **any** data for the current MMSI to be output.

Options - File Output	
File Name	If NMEA output the default name will be output.nmea If CSV output the default name will be output.csv IF Tagged output the default name will be the same as the Tag Template File
New File	Allows you to select your own file name If the file extension is KMZ, the output file will be Zipped Up.
Rollover	Start a new Output File (with a new name) daily at midnight. Only allowed if output file is not scheduled.

Options - UDP Output	
IP	The IP Address of the UDP Client
Port	The UDP Port number to use

Options - All Settings

Retrieve, Save or Create your setting. There is no limit to the number of settings you can create.

All Settings	
Open New	Will allow you to browse for an existing initialisation file, which contains any previously saved settings. This setting file selected will be used immediately by the decoder, even if currently running.
Save	Saves the current settings to the Current setting file displayed in the top of the window. The directory is displayed at the bottom of the Options Window.
Save New	Saves the current settings to a new Settings File

Show Files	List the name and location of all current files in use

See Also Default Setting and Example Settings

Example Settings

There are a number of different Example Settings file distributed with AisDecoder, to demonstrate some of the possibilities for you to tailor the Output.

To select a different setting see Options - All Settings

Example Settings				
Setting	**Description**	**Initialisation File**	**Template File**	**Output File**
default	Textually displays decoded data of all messages	default.ini	none	none
Google Earth	Creates a File formatted for display by Google Earth	GoogleEarth.ini	GoogleEarth.kml	GoogleEarth.kmz
Google Maps	Creates a File formatted for display by Google Maps	GoogleMaps.ini	data.xml	data.xml
CSV	Creates a CSV File containing the decoded data of all received AIS messages	CsvAll.ini	none	output.csv
Excel	Creates a CSV file suitable for import into an Excel spreadsheet, containing common navigational fields	Excel.ini	none	output.csv
UDP Tags and Range	Outputs to a UDP port decoded data containing selected AIS message fields for vessels within a selected Geographical area	UdpTagsRange.ini	none	none (UDP)
HTML	Outputs HTML for submission to Web Server	Html.ini	example.html	example.html

aspx	aspx script	aspx.ini	example.aspx	example.aspx
spnmea	Creates a decoded CSV file from a Shipplotter spnmea file	spnmea.ini	none	output.csv

Default Setting

The default setting is the initial start-up setting.

Initial Settings
UDP input on port 29421
Log all NMEA input to nmea.log (with time stamp)
Displays All Received NMEA Sentences
Displays Summary of Received AIS messages
Click on Received AIS message to display fully decoded textual content

Google Earth Setting

Creates KMZ file for display on local PC using Google Earth
Once a file has been created you may click the GIS button to view your Vessels on Google Earth

Settings
UDP input on port 29421
Field Tags are set to decode Ships data that is required to be displayed on Google Earth.
Input Filter is Synchronised to Output Tags

The update interval is 1 minute and vessels will be displayed for 15 minutes after the last message has been received.
The Tag Template file being used is \Templates\GoogleEarth.kml

This Output File will be created using Tags (specified in the Output Tags and Range)
GIS filtering ensures no vessel is output unless a Latitude and Longitude has been received.
A new file is Scheduled for output every one minute
The Output File will be \Output\GoogleEarth.kmz

Starting the decoding (press the start button)
The GIS button will become available when the kmz file has been created

Press the GIS button
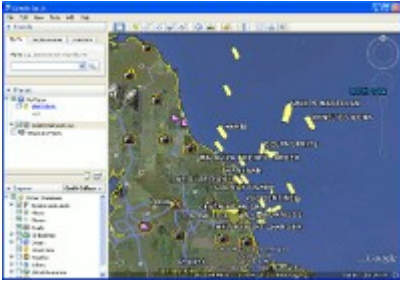
Google Earth will display the vessels.

See also
Uploaded To Web Server for display on the internet.
Configuring Google Earth to Automatically refresh

Google Maps Setting

Creates an Output XML file formatted for display by Google Maps

Initial Settings
UDP input on port 29421
Field Tags are set to decode Ships data that is required to be displayed on Google Maps.
Input Filter is Synchronised to Output Tags
File Output is Tagged with GIS filtering
A new file is Scheduled for output every one minute
The Tag Template file to merge AIS data into XML format is data.xml

You may also
The file created may also be uploaded to a Web Server for display on Google Earth by anyone.

Example - These use the templates produced by my Data Analysis Program, the principle is identical.

The XML or KML files have to be integrated with Google Maps to create a meaningful ("rendered") display on your website.
The original way Google rendered your ships on their map necessitated you placing a XML file on your (or ISP's) server, registering with Google, and creating a custom webpage. It is the custom webpage you view to see your ships on Google's map. To view my current XML list of ships overlaid on Google maps
click **View XML file rendering**.

Example XML Source
```
<markers>
<marker lat="53.648310" lon="-0.208423" name="FS PHILIPPINE" dx="0.000" dy="0.000"
type="Tanker-carrying DG,HS,MP,IMO haz or pollutant X" ais="228320800!9310305!FMDU!
IMMINGHAM!0222:0930!0.0!79.0!!Under way sailing (Rule 25)!140!23!8.8!22/02/2011 17:40:57!
Ship and Voyage Report"/>
<marker lat="54.035500" lon="0.206833" name="" dx="0.000" dy="0.000" type=""
ais="250000962!!!!:!13.3!135.0!!Under way using engine (Rule 23(a) or Rule 25(e))!!!!22/02/2011
17:40:57!"/>
<marker lat="53.738860" lon="-0.260938" name="" dx="0.000" dy="0.000" type=""
ais="304970000!!!!:!0.0!285.0!!Under way using engine (Rule 23(a) or Rule 25(e))!!!!22/02/2011
17:41:03!"/>
<marker lat="54.441670" lon="0.698505" name="" dx="0.000" dy="0.000" type=""
ais="419504000!!!!:!11.0!139.0!!Under way using engine (Rule 23(a) or Rule 25(e))!!!!22/02/2011
17:40:59!"/>
</markers>
```

Google now have another method which which allows you to see your ships overlaid on their map,

without you needing a custom webpage data. This requires a KML file and will not work with a XML file, the KML file does need to be on a web-server. The same method (using a KML file) is used to render your data using Google Earth rather than Google maps. To use a KML file you simply upload the KML file and in your browser enter
http://maps.google.com/maps?q=mywebsiteurl.
For example to view my current data click **http://maps.google.com/maps?q=http://web.arundale.co.uk/docs/ais/data.kml**

If you have looked at both the XML and KML renditions, you will have noticed the XML version contains much more information about the ships than the KML version. This is because XML version I have of the actual webpage I an using is to make it compatible with the widely used sample webpage vbship4.zip which can be downloaded from the files section (vbscripts) of the ShipPlotter forum. The KML version I have kept simple so that you can see the wood from the trees. You can alter this later.

CSV Setting

Initial Settings
UDP input on port 29421
Log all NMEA input to nmea.log (with time stamp)
Displays All Received NMEA Sentences
Displays Summary of Received AIS messages
Click on Received AIS message to display fully decoded textual content

The Decoder will output all decoded value fields as CSV, if CSV output is selected and **NO** field Tags are selected.
If any fields are tagged, only the tagged fields will be output.

If no fields are tagged the Output Format is:-
The same as on the Detail Window except for clarity the created time,NMEA sentence and the payload are omitted.

CSV Output All Fields - File
(Browser may wrap lines)
23/02/2011 10:43:36,,!AIVDM,1,1,,1,0,235475000,235,0,0,0.0,0,-0.294167,53.746000,39.0,272,33,0,0,0,0,0,4,1394
23/02/2011 10:43:36,,!AIVDM,1,1,,1,0,235475000,235,0,0,0.0,0,-0.294167,53.746000,39.0,272,33,0,0,0,0,0,4,1394
23/02/2011 10:43:36,AMANDINE,!AIVDM,2,2,4,5,0,253047000,253,1,9424871,LXAM,AMANDINE,71,146,49,195,15,15,30,1,02,23,07,00,7.2,KILLINGHOLME,0,0
23/02/2011 10:43:36,,!AIVDM,1,1,,1,0,232079000,232,0,0,15.8,0,0.257683,53.836980,335.0,332,38,0,0,1,0,0,0,2253
23/02/2011 10:43:36,CORAGGIO,!AIVDM,1,1,,1,0,247188200,247,0,0,0.1,0,-0.230233,53.666580,144.0,144,35,0,0,0,0,0,1,10,43
23/02/2011 10:43:37,,!AIVDM,1,1,,1,0,232003329,232,0,-128,3.4,0,0.625418,53.970200,20.0,511,38,0,0,0,0,0,7,18
23/02/2011 10:43:37,AMUR 2524,!AIVDM,1,1,,1,0,273324000,273,0,-127,6.7,0,0.452878,54.147750,150.0,156,39,0,0,0,0,0,0,2294
23/02/2011 10:43:37,,!AIVDM,1,1,,1,0,236263000,236,0,16,13.7,0,0.400488,54.035790,324.0,323,38,0,0,1,0,0,2,1450
23/02/2011 10:43:37,SIGAS CHAMPION,!AIVDM,1,1,,1,0,564120000,564,0,0,11.4,0,-0.137148,54.574670,327.0,326,39,0,0,0,0,0,5,1
23/02/2011 10:43:37,,!AIVDM,1,1,,1,0,308583000,308,0,-127,2.5,0,0.548317,54.574230,175.0,176,40,0,0,1,0,1,1,24,60
CSV Output All Fields - Display

File Output [output.csv]

```
23/02/2011 10:43:36,,!AIVDM,1,1,,1,0,235475000,235,0,0,0.0,0,-0.294167,53.746000,39.0,272,33,0,0,0,0,0,4,1394
23/02/2011 10:43:36,,!AIVDM,1,1,,1,0,235475000,235,0,0,0.0,0,-0.294167,53.746000,39.0,272,33,0,0,0,0,0,4,1394
23/02/2011 10:43:36,AMANDINE ,!AIVDM,2,2,4,5,0,253047000,253,1,9424871,LXAM,AMANDINE ,71,146,49,195,15,15,30,1,02,23,07,00,7.2,KILLIN
23/02/2011 10:43:36,,!AIVDM,1,1,,1,0,232079000,232,0,0,15.8,0,0,257683,53.836980,335.0,332,38,0,0,1,0,0,0,2253
23/02/2011 10:43:36,CORAGGIO ,!AIVDM,1,1,,1,0,247188200,247,0,0,0.1,0,-0.230233,53.666580,144.0,144,35,0,0,0,0,0,1,10,43
23/02/2011 10:43:37,,!AIVDM,1,1,,1,0,232003329,232,0,-128,3.4,0,0,625418,53.970200,20.0,511,38,0,0,0,0,0,7,18
23/02/2011 10:43:37,AMUR 2524,!AIVDM,1,1,,1,0,273324000,273,0,-127,6.7,0,0,452878,54.147750,150.0,156,39,0,0,0,0,0,0,2294
23/02/2011 10:43:37,,!AIVDM,1,1,,1,0,236263000,236,0,16,13.7,0,0,400488,54.035790,324.0,323,38,0,0,1,0,0,2,1450
23/02/2011 10:43:37,SIGAS CHAMPION,!AIVDM,1,1,,1,0,564120000,564,0,0,11.4,0,-0.137148,54.574670,327.0,326,39,0,0,0,0,0,5,1
23/02/2011 10:43:37,,!AIVDM,1,1,,1,0,308583000,308,0,-127,2.5,0,0,548317,54.574230,175.0,176,40,0,0,1,0,1,1,24,60
```
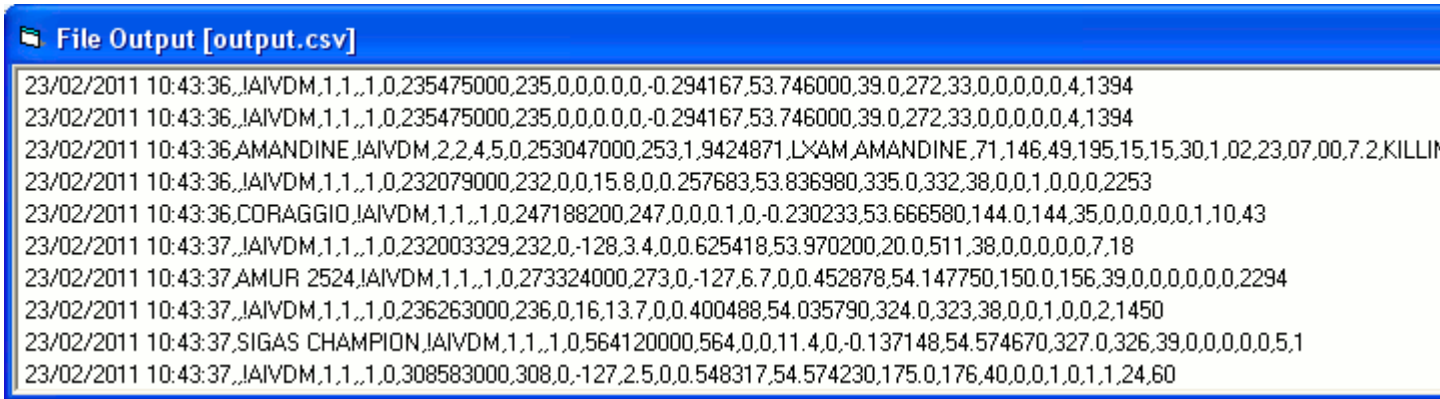
CSV Decoded Output Selected Fields - File
(Browser may wrap lines)
247188200,CORAGGIO,53° 39.9950' N,0° 13.8140' W,0.0,144.0
253047000,,53° 40.1143' N,0° 13.9960' W,0.0,324.0
253310000,,53° 39.9479' N,0° 13.8860' W,0.0,144.0
273324000,AMUR 2524,54° 11.4175' N,0° 24.2075' E,6.7,148.0
308282000,TOISA DEFIANT,54° 15.6109' N,0° 19.2650' E,11.1,335.0
308583000,OCEAN SPRITE,54° 35.5371' N,0° 32.7160' E,2.0,176.0
319402000,STOLT SHEARWATER,54° 2.4300' N,0° 26.7200' E,10.1,147.0
477720300,STAR SEA BULKER,53° 38.2599' N,0° 11.7100' W,0.0,33.0
518408000,SWAN DIANA,54° 11.1028' N,0° 0.0398' E,7.7,316.0
564120000,SIGAS CHAMPION,54° 30.0817' N,0° 3.4236' W,11.1,328.0

CSV Output Selected Fields - Display

File Output [output.csv]

```
247188200,CORAGGIO,53° 39.9950' N,0° 13.8140' W,0.0,144.0
253047000,,53° 40.1143' N,0° 13.9960' W,0.0,324.0
253310000,,53° 39.9479' N,0° 13.8860' W,0.0,144.0
273324000,AMUR 2524,54° 11.2255' N,0° 24.4156' E,6.9,147.0
308282000,TOISA DEFIANT,54° 15.9451' N,0° 19.0070' E,11.1,335.0
308583000,OCEAN SPRITE,54° 35.4641' N,0° 32.7250' E,2.2,176.0
319402000,STOLT SHEARWATER,54° 2.1400' N,0° 27.0200' E,10.1,149.0
477720300,STAR SEA BULKER,53° 38.2599' N,0° 11.7100' W,0.0,33.0
518408000,SWAN DIANA,54° 11.2905' N,0° 0.2587' W,7.7,317.0
564120000,SIGAS CHAMPION,54° 30.4003' N,0° 3.7644' W,11.5,330.0
```

Excel

Creates a CSV file suitable for import into an Excel spreadsheet, containing common navigational fields

Initial Settings

```
File
☑ File Output   ☐ FTP
○ NMEA    ☐ +Time Stamp
◉ CSV  ☑ Head ☐ Delimiter
○ Tagged  ☐ GIS Filtered
☐ Scheduled
☐ Range Filtered

File Output
output.csv

[New File]  ☐ Rollover
```
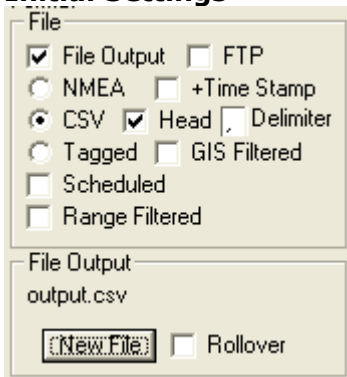
A header line is output
Field Tags are set to decode common navigational vessels' data
Only those Tags which have been added to the Output Fields and Tags are output, because Tagged is not selected. If Tagged was selected, these fields would be merged with the Template file.
Every sentence is output individually because scheduled has not been ticked.
UDP input on port 29421

Input Filter is Synchronised to Output Tags
Displays NMEA data as received
Outputs CSV data to output.csv
Displays CSV data that is output

You may also
Click on any received message summary to display complete decoded data
Turn off all the displays (click the X on the window)

Notes
You should not set Tagged output, it should be CSV output otherwise the values output may be re-formatted, which could result in some characters being formatted incorrectly.

Sample Output - Imported into Excel

Notes on Excel formatting
MMSI - Set as Numeric with 0 decimal places
Time Stamp - Use Custom Format to display both Date and Time including Seconds
Headings are the same as Column 1 on the Detail Window
If you wished Latitude and Longitude in decimal notation, set tag up from column 2 on the Detail Window (column 3 is formatted).

CSV file before import into Excel
(lines may be wrapped by your browser)
MMSI,Vessel Name,Latitude,Longitude,Speed Over Ground (SOG),Course Over Ground (COG),Received Time
249546000,CLIPPER BURGUNDY,54° 27.0511' N,0° 20.1287' W,8.4,325.0,10/03/2011 15:35:29
259957000,SKS TRINITY,53° 38.2677' N,0° 11.7286' W,0.0,340.0,10/03/2011 15:35:36
233921000,CITY OF PARIS,54° 10.9760' N,0° 0.3980' W,10.9,317.0,10/03/2011 15:35:38
308583000,,54° 35.3920' N,0° 31.2870' E,3.3,94.0,10/03/2011 15:35:39
249546000,CLIPPER BURGUNDY,54° 27.0705' N,0° 20.1511' W,8.4,326.0,10/03/2011 15:35:40
233308000,MAGGIE_M,54° 17.0277' N,0° 23.4676' W,0.1,239.0,10/03/2011 15:35:40
232001610,UKDMARLIN,54° 0.2900' N,0° 5.2630' E,8.9,155.0,10/03/2011 15:35:41
235453000,PUTFORD PROTECTOR,53° 44.8100' N,0° 17.5100' W,0.0,171.0,10/03/2011 15:35:41
235077712,UKD ORCA,53° 38.7573' N,0° 10.6778' W,0.5,354.0,10/03/2011 15:35:42
246762000,,53° 39.9770' N,0° 13.7970' W,0.0,144.0,10/03/2011 15:35:42
230366000,BIRKA EXPRESS,53° 44.3651' N,0° 15.8334' W,0.0,12.0,10/03/2011 15:35:43
355754000,PEARL ACE,54° 13.3381' N,0° 54.5610' E,17.4,303.0,10/03/2011 15:35:45

UDP Tags and Range Setting

This demonstrates how to receive NMEA data, and output the Decoded data by UDP to another program. Only ships within a defined geographic area are output.
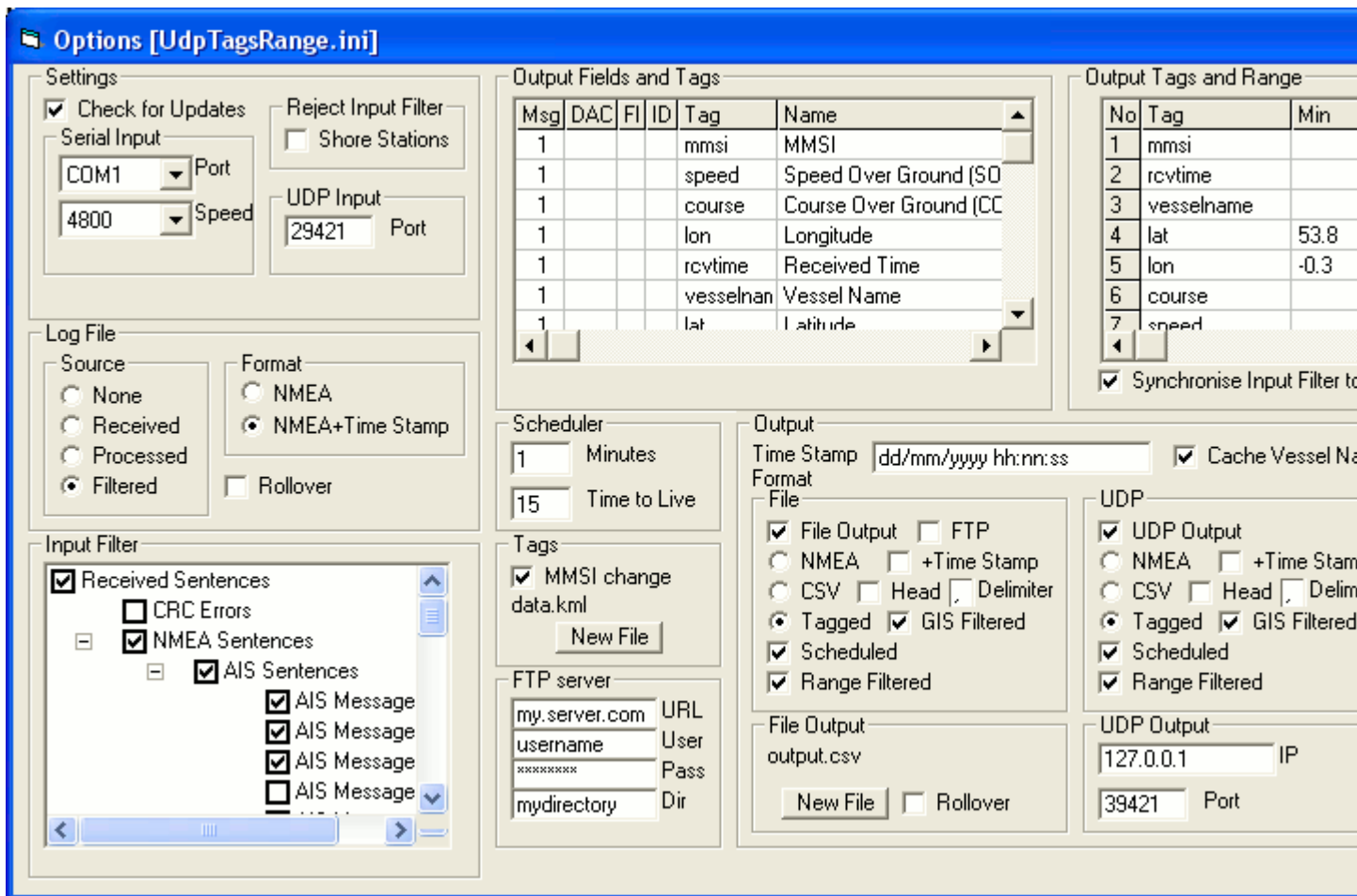
Options [UdpTagsRange.ini]

Initial Settings
UDP input on port 29421
Field Tags are set to decode Ships data that is required to be output.
Tag ranges are set to only output Vessels within a Geographic area
Vessels are output in batches every minute, containing data received within the previous 15 minutes.
GIS filtering ensures that no data will be output unless the Vessel has output a position report as it may only have output a static data report.
Input Filter is Synchronised to Output Tags
Data is being output both to a file and UDP to a server.

Example of UDP Output
(line may be wrapped by browser)
212946000,17/02/2011 11:18:59,PUCCINI,54.136330,0.273500,155.0,11.1
235004970,17/02/2011 11:18:55,,54.234660,0.157333,332.0,15.3
235053623,17/02/2011 11:18:57,CLONLEE,54.351330,-0.226333,327.0,15.6
235059422,17/02/2011 11:18:39,NE GUARDIAN III,54.391570,-0.089543,1.0,19.7
244242000,17/02/2011 11:18:52,,54.185170,-0.070167,328.0,9.6

HTML Example

This demonstrates how to output Vessels' data formatted with HTML so that when opened in a browser, it is nicely laid out.
The file created can be automatically uploaded to a web site by setting up the FTP option.

Note you can click on the GIS button to display the outputted file in your default browser.

Initial Settings
UDP input on port 29421
Field Tags are set to decode Ships data that is required to be output.
The data is output in batches every minute Vessels, containing data received within the previous 15 minutes.
GIS filtering is disabled so all data is output

Input Filter is Synchronised to Output Tags
The source HTML is displayed in a window as it it output to the data.html file

Example Output - Browser

Name	Position	Course	Speed
PUCCINI	54° 4.6701' N, 0° 19.4100' E	162.0	11.4
KEY FIGHTER	53° 38.0084' N, 0° 11.3054' W	67.0	0.0
CITY OF WESTMINSTER	53° 44.7599' N, 0° 17.6800' W	142.0	0.1

Source

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<html><head>
<title>Ais Decoder</title>
<meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1">
<style type="text/css">
<!--
.html_head {font-size: 10px; color: #000000; font-family: arial, sans-serif; }
.content_header {color: #ff0000; }
-->
</style>
</head>
<body>
<table class="html_head">
<tr
class="content_header"><td>Name</td><td>Position</td><td>Course</td><td>Speed</td></
tr>
<tr><td>PUCCINI</td><td>54&#176; 4.3101&apos; N, 0&#176; 19.6000&apos;
E</td><td>165.0</td><td>11.4</td></tr>


<tr><td>KEY FIGHTER</td><td>53&#176; 38.0090&apos; N, 0&#176; 11.3053&apos;
W</td><td>190.0</td><td>0.0</td></tr>
<tr><td>CITY OF WESTMINSTER</td><td>53&#176; 44.7599&apos; N, 0&#176; 17.6800&apos;
W</td><td>142.0</td><td>0.1</td></tr>
</table></body></html>
```

ASPX Example

This demonstrates a template to produce an Active Server Page Script.

Initial Settings
UDP input on port 29421
Field Tags are set to decode Ships data that is required to be output.
The data is output in batches every minute Vessels, containing data received within the previous 15 minutes.
GIS filtering is disabled so all data is output
Input Filter is Synchronised to Output Tags
The Template file is example.aspx
The source is displayed in a window as it is output to the example.aspx file

Example Output - Source
(line may be wrapped by your browser)
Put your Head information here, it will be placed at the top of the file
ais.aspx?mmsi=210445000&vesselname=&receivedtime=17/02/2011 12:07:52&lon=0°
17.2900' W&lat=53° 44.7299' N&course=331.0&speed=0.0
ais.aspx?mmsi=212946000&vesselname=PUCCINI&receivedtime=17/02/2011
12:07:59&lon=0° 21.5400' E&lat=53° 59.4901'
N&course=175.0&speed=11.7
ais.aspx?mmsi=215211000&vesselname=KEY FIGHTER&receivedtime=17/02/2011
12:07:46&lon=0° 11.3056' W&lat=53° 38.0054'

N&course=37.0&speed=0.0
Any text here will be placed at the bottom of the file.

Shipplotter spnmea Setting

Initial Settings
Log file input
Log all NMEA input to nmea.log (with time stamp)
Displays All Received NMEA Sentences
Displays Summary of Received AIS messages
Click on Received AIS message to display fully decoded textual content

On Start select spnmea file to be decoded
The Output Format is:-
The same as on the Detail Window except for clarity the created time,NMEA sentence and the payload are omitted

If any fields are tagged, only the tagged fields will be output.

SPNMEA input file
!AIVDM,1,1,,A,13;5<D001L00<t8NwVI5ATEF08Kc,0*7A
$GPZDA,123047,14,08,2010,+00,00*6E
!AIVDM,1,1,,A,13Pi8L0P00023hjNrlsA8?wP0<0F,0*02
!AIVDM,1,1,,A,14WU7D0OiqOwteBNw@5L`awP0D0D,0*78
$GPZDA,123048,14,08,2010,+00,00*61
!AIVDM,1,1,,A,14Uumt0Oi:00GQ0O;Ab6FTuR0L0>,0*36
!AIVDM,1,1,,A,14QsCa002Gww>8LO1T6<A9uP0D0A,0*64
!
AIVDM,2,1,1,A,58UQ<802@Vj9TaIWV20pE@PE8h4pB1@T@F22220l2Hk8865E0<Tm<p8888888888,
0*46
!AIVDM,2,2,1,A,8888880,2*25
$GPZDA,123049,14,08,2010,+00,00*60

SPNMEA input file, File Output All Fields - Display

File Output [output.csv]

```
!AIVDM,1,1,,A,7A,,1,0,212946000,212,0,0,9.2,0,0.044167,54.165500,135.0,138,43,0,0,0,0,0,2,1771
$GPZDA,123047,14,08,2010,+00,00,6E
!AIVDM,1,1,,A,02,,1,0,235686000,235,0,-128,0.0,0,0,0.449748,54.035170,29.0,511,48,0,0,0,0,0,3,22
!AIVDM,1,1,,A,78,,1,0,309938000,309,0,127,12.1,0,-0.011238,54.155980,323.0,319,48,0,0,0,0,0,5,20
$GPZDA,123048,14,08,2010,+00,00,61
!AIVDM,1,1,,A,36,,1,0,308246000,308,0,127,7.4,0,0.080267,54.484330,163.0,158,49,0,0,0,0,0,7,14
!AIVDM,1,1,,A,64,,1,0,304010148,304,0,0,15.1,1,-0.170217,54.219130,314.0,318,48,0,0,0,0,0,5,17
!AIVDM,2,1,1,A,46,NETHERLAND TIDE,5,0,576212000,576,0,9476898,YJVY9,NETHERLAND TIDE,52,19,51,70,8,8,16,1,08,10,21,00,5,ST3,0,0,-4
!AIVDM,2,2,1,A,25,NETHERLAND TIDE,5,0,576212000,576,0,9476898,YJVY9,NETHERLAND TIDE,52,19,51,70,8,8,16,1,08,10,21,00,5,ST3,0,0
$GPZDA,123049,14,08,2010,+00,00,60
```

SPNMEA input file, CSV Output Selected Fields - Display

SPNMEA input file, CSV Output Selected Fields - Excel

Output

Output	
[Channels](#)	[File](#), [UDP](#). To Output to a Web Server you first output to a file then send it to a Web Server using FTP
[Format](#)	[NMEA](#),[CSV](#),[HTML](#),[KML](#),[KMZ](#)
[Fields](#)	[Selecting message fields](#) to be output
[Template Files](#)	Formatting Output using Template Files
[Filtering](#)	Range Filtering Output Tag Values
[Scheduling](#)	Outputting accumulated messages at times intervals

Output Channels

There are two output channels.
One outputs to a File, the other outputs To your Network.

Output Options - Common to both Channels	
Display Output	Displays the data in a separate Window as it is being output.
NMEA	Output NMEA data
Time Stamp	Optionally Time Stamp the NMEA data output
CSV	Output data as CSV
Head	Output a header line at the start of the file
Delimiter	Specify a CSV delimiter (default is comma)
Tagged	Output Template File with Tags replaced by Tag Values
GIS filtered	Only output MMSI if vessel's position is known
Scheduled	Output received sentences at scheduled intervals
Range Filtered	Apply range filtering to output data

The options for both channels are the same excepting

If you output to a file you have an additional option of sending the file created to a Web Server using FTP and you can select an output file name.

If you output UDP to the network you must set up a UDP port.

Output To File

Output to File - Specific Options	
File Output	Start Outputting to a File

FTP	Sends the Output File to the FTP server at the Scheduled time

see also Output Channels, Output to Web Server, FTP

You may also set the Output File Name

Output To Network

Output to Network - Specific Options	
UDP Output	Start Outputting to UDP Port

See also Output Channels
If you output UDP to the network you must set up an IP address and UDP port.

Output To Web Server

To Output to a Web Server you must Output to a File

and send the file to the Web Server using FTP

Output Format

There are 3 basic output formats

Output Formats	
NMEA	NMEA (not - decoded) either time stamped or not
CSV	Comma Separated

Tagged	The format is set by a Template file, which contains Tags which have the tag substituted with a decoded AIS message field value, prior to output.

By creating a Template File you can output decoded fields in any format you wish.

NMEA Output

NMEA is output to Input Log files, which allow you to select all received messages or Input Filtered messages. You can input filter messages by Message type, DAC, FI and MMSI

NMEA data is never output as decoded data.

If you wish to output NMEA data which is dependent on individual fields which are not filtered by the input filter this can still be done by setting the output as NMEA.
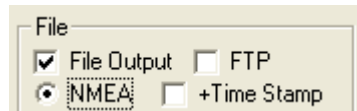
To append the time stamp of the original NMEA message, tick the + Time Stamp box.

If you are outputting NMEA messages which and are not using the Scheduler, you may be intermixing AIS sentences with GPS sentences. Sentences are normally buffered and output when the MMSI changes. You can stop this behaviour by unticking MMSI change.
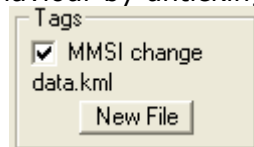
You can Schedule NMEA output by ticking the Schedule box.
In this case note the NMEA sentences are output MMSI order and NOT in the order the sentences are received.

You can also Set Tags for NMEA output, in this only the NMEA sentences for a MMSI will be output if the MMSI passes the Tag Range check. Only AIS messages may be Tagged.

See also Range Filtered NMEA Output

CSV Output

The Decoder will output ALL fields or specified fields you require to be output to a csv file.

The Decoder will output all decoded value fields as CSV, if CSV output is selected and **NO** field Tags are selected. See Output ALL fields

To output specified fields you need to "tag" the fields you require outputting individually for each AIS message type you are interested in.
Click on the field you are interested in on the detail window and set the outputs to File and Display in the Options window.
This field will be output in the first "column" of the csv file.

For example if you wish to output the MMSI from AIS Message type 1
1. On the Control/Stats Window
   click Options

2. On the Options Window
    In the Accept Input Filter box
    Tick AIS Message 1
    Click OK

3. On the Control/Stats Window
    Ensure the Display - Summary - Input Filtered button is selected
    Click Start
    After a message has been displayed in the Summary Window

4. On the Summary Window
    Click any message line
    The Detail Display for this AIS message will be displayed

5. On the Detail Window
    Click the Cell containing the MMSI number (this will be in the second column).
    The Input Field Window will be displayed

6. On the Input Field Window
    Note you can rename the default field names to combine or split them on output)
    Click OK

7. Repeat from step 5 to set up additional fields

8. Repeat from step 2 for additional message types

This all sounds very complicated, but if you try it, it should be fairly obvious

HTML Output

You can output your decoded input data as an HTML file by

1. Creating a HTML Template file.

2. Creating Tags for any AIS field values you require substituting in your template file.

See also [Example Settings HTML](#)

KML Output

KML is the Google Earth and Google Maps format for overlaying your own data on either Google GIS.

KML is a XML file with "special" Google tags.

You can output your decoded input data as a KML file by

1. Creating a KML Template file.

2. Creating Tags for any AIS field values you require substituting in your template file.

See also Example Settings [Google Earth](#) and [Google Maps](#)

KMZ Output

KMZ is Google's preferred format for overlaying your own data on Google Earth.
A KMZ file will not work with Google Maps.

The basic content of a KMZ file is the same as a KML file, only it is "Zipped Up"

To Output a KMZ file create a [KML](#) file making the file extension KMZ.

Date and Time
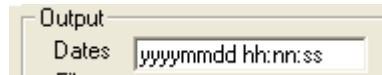
The time and date stamp appended to the log file will always be UTC formatted with your PC's date and time settings.

You can set the format that is output to the Detail display and the any tags created from the detail display including CSV output by setting the format in the dates box.

This format must conform to "windows" formatting.

Format specifier	Description	Examples
"d"	The day of the month, from 1 through 31.	6/1/2009 1:45:30 PM -> 1 6/15/2009 1:45:30 PM -> 15
"dd"	The day of the month, from 01 through 31.	6/1/2009 1:45:30 PM -> 01 6/15/2009 1:45:30 PM -> 15
"ddd"	The abbreviated name of the day of the week.	6/15/2009 1:45:30 PM -> Mon (en-US) 6/15/2009 1:45:30 PM -> Пн (ru-RU) 6/15/2009 1:45:30 PM -> lun. (fr-FR)
"dddd"	The full name of the day of the week.	6/15/2009 1:45:30 PM -> Monday (en-US) 6/15/2009 1:45:30 PM -> понедельник (ru-RU) 6/15/2009 1:45:30 PM -> lundi (fr-FR)
"f"	The tenths of a second in a date and time value.	6/15/2009 13:45:30.617 -> 6 6/15/2009 13:45:30.050 -> 0
"ff"	The hundredths of a second in a date and time value.	6/15/2009 13:45:30.617 -> 61 6/15/2009 13:45:30.005 -> 00

"fff"	The milliseconds in a date and time value.	6/15/2009 13:45:30.617 -> 617 6/15/2009 13:45:30.0005 -> 000
"ffff"	The ten thousandths of a second in a date and time value.	6/15/2009 13:45:30.6175 -> 6175 6/15/2009 13:45:30.00005 -> 0000
"fffff"	The hundred thousandths of a second in a date and time value.	6/15/2009 13:45:30.61754 -> 61754 6/15/2009 13:45:30.000005 -> 00000
"ffffff"	The millionths of a second in a date and time value.	6/15/2009 13:45:30.617542 -> 617542 6/15/2009 13:45:30.0000005 -> 000000
"fffffff"	The ten millionths of a second in a date and time value.	6/15/2009 13:45:30.6175425 -> 6175425 6/15/2009 13:45:30.0001150 -> 0001150
"F"	If non-zero, the tenths of a second in a date and time value.	6/15/2009 13:45:30.617 -> 6 6/15/2009 13:45:30.050 -> (no output)
"FF"	If non-zero, the hundredths of a second in a date and time value.	6/15/2009 13:45:30.617 -> 61 6/15/2009 13:45:30.005 -> (no output)
"FFF"	If non-zero, the milliseconds in a date and time value.	6/15/2009 13:45:30.617 -> 617 6/15/2009 13:45:30.0005 -> (no output)
"FFFF"	If non-zero, the ten thousandths of a second in a date and time value.	6/1/2009 13:45:30.5275 -> 5275 6/15/2009 13:45:30.00005 -> (no output)
"FFFFF"	If non-zero, the hundred thousandths of a second in a date and time value.	6/15/2009 13:45:30.61754 -> 61754 6/15/2009 13:45:30.000005 -> (no output)
"FFFFFF"	If non-zero, the millionths of a second in a date and time value.	6/15/2009 13:45:30.617542 -> 617542 6/15/2009 13:45:30.0000005 -> (no output)
"FFFFFFF"	If non-zero, the ten millionths of a second in a date and time value.	6/15/2009 13:45:30.6175425 -> 6175425 6/15/2009 13:45:30.0001150 -> 000115
"g", "gg"	The period or era.	6/15/2009 1:45:30 PM -> A.D.
"h"	The hour, using a 12-hour clock from 1 to 12.	6/15/2009 1:45:30 AM -> 1 6/15/2009 1:45:30 PM -> 1
"hh"	The hour, using a 12-hour clock from	6/15/2009 1:45:30 AM -> 01

		01 to 12.	6/15/2009 1:45:30 PM -> 01
"H"	The hour, using a 24-hour clock from 0 to 23.		6/15/2009 1:45:30 AM -> 1
			6/15/2009 1:45:30 PM -> 13
"HH"	The hour, using a 24-hour clock from 00 to 23.		6/15/2009 1:45:30 AM -> 01
			6/15/2009 1:45:30 PM -> 13
"K"	Time zone information.		With DateTime values:
			6/15/2009 1:45:30 PM, Kind Unspecified ->
			6/15/2009 1:45:30 PM, Kind Utc -> Z
			6/15/2009 1:45:30 PM, Kind Local -> -07:00 (depends on local computer settings)
			With DateTimeOffset values:
			6/15/2009 1:45:30 AM -07:00 --> -07:00
			6/15/2009 8:45:30 AM +00:00 --> +00:00
"m"	The minute, from 0 through 59.		6/15/2009 1:09:30 AM -> 9
			6/15/2009 1:09:30 PM -> 9
"mm"	The minute, from 00 through 59.		6/15/2009 1:09:30 AM -> 09
			6/15/2009 1:09:30 PM -> 09
"M"	The month, from 1 through 12.		6/15/2009 1:45:30 PM -> 6
"MM"	The month, from 01 through 12.		6/15/2009 1:45:30 PM -> 06
"MMM"	The abbreviated name of the month.		6/15/2009 1:45:30 PM -> Jun (en-US)
			6/15/2009 1:45:30 PM -> juin (fr-FR)
			6/15/2009 1:45:30 PM -> Jun (zu-ZA)
"MMMM"	The full name of the month.		6/15/2009 1:45:30 PM -> June (en-US)
			6/15/2009 1:45:30 PM -> juni (da-DK)
			6/15/2009 1:45:30 PM -> uJuni (zu-ZA)
"s"	The second, from 0 through 59.		6/15/2009 1:45:09 PM -> 9
"ss"	The second, from 00 through 59.		6/15/2009 1:45:09 PM -> 09
"t"	The first character of the AM/PM designator.		6/15/2009 1:45:30 PM -> P (en-US)
			6/15/2009 1:45:30 PM -> 午 (ja-JP)

		6/15/2009 1:45:30 PM -> (fr-FR)
		6/15/2009 1:45:30 PM -> PM (en-US)
"tt"	The AM/PM designator.	6/15/2009 1:45:30 PM -> 午後 (ja-JP)
		6/15/2009 1:45:30 PM -> (fr-FR)
"y"	The year, from 0 to 99.	1/1/0001 12:00:00 AM -> 1
		1/1/0900 12:00:00 AM -> 0
		1/1/1900 12:00:00 AM -> 0
		6/15/2009 1:45:30 PM -> 9
"yy"	The year, from 00 to 99.	1/1/0001 12:00:00 AM -> 01
		1/1/0900 12:00:00 AM -> 00
		1/1/1900 12:00:00 AM -> 00
		6/15/2009 1:45:30 PM -> 09
"yyy"	The year, with a minimum of three digits.	1/1/0001 12:00:00 AM -> 001
		1/1/0900 12:00:00 AM -> 900
		1/1/1900 12:00:00 AM -> 1900
		6/15/2009 1:45:30 PM -> 2009
"yyyy"	The year as a four-digit number.	1/1/0001 12:00:00 AM -> 0001
		1/1/0900 12:00:00 AM -> 0900
		1/1/1900 12:00:00 AM -> 1900
		6/15/2009 1:45:30 PM -> 2009
"yyyyy"	The year as a five-digit number.	1/1/0001 12:00:00 AM -> 00001
		6/15/2009 1:45:30 PM -> 02009
"z"	Hours offset from UTC, with no leading zeros.	6/15/2009 1:45:30 PM -07:00 -> -7
"zz"	Hours offset from UTC, with a leading zero for a single-digit value.	6/15/2009 1:45:30 PM -07:00 -> -07
"zzz"	Hours and minutes offset from UTC.	6/15/2009 1:45:30 PM -07:00 -> -07:00
":"	The time separator.	6/15/2009 1:45:30 PM -> : (en-US)
		6/15/2009 1:45:30 PM -> . (it-IT)

		6/15/2009 1:45:30 PM -> : (ja-JP)
		6/15/2009 1:45:30 PM -> / (en-US)
"/"	The date separator.	6/15/2009 1:45:30 PM -> - (ar-DZ)
		6/15/2009 1:45:30 PM -> . (tr-TR)
"string" 'string'	Literal string delimiter.	6/15/2009 1:45:30 PM ("arr:" h:m t) -> arr: 1:45 P 6/15/2009 1:45:30 PM ('arr:' h:m t) -> arr: 1:45 P
%	Defines the following character as a custom format specifier.	6/15/2009 1:45:30 PM (%h) -> 1
\	The escape character.	6/15/2009 1:45:30 PM (h \h) -> 1 h
Any other character	The character is copied to the result string unchanged.	6/15/2009 1:45:30 AM (arr hh:mm t) -> arr 01:45 A

Selecting and Tagging Output Fields

Each AIS message consists of a number of fields, for example AIS message 1 contains MMSI, Longitude & Latitude *plus a number of other fields.*

Fields		
Field Name	**Field Value**	**Field Description**
MMSI	249379000	
Longitude	0.301626	0° 18.0975' N
Latitude	54.773910	55° 46.4346' N

To identify these fields uniquely, these fields must be named with a "Tag"
All Decoded AIS Message fields can be viewed in the Detail Window on which you select the fields you wish to output.

The Default names for these fields are

Default Tags		
Name Tag	**Value Tag**	**Description Tag**
mmsi_1	mmsi_2	mmsi_3
lon_1	lon_2	lon_3
lat_1	lat_2	last_3

If you create a template file, which is a plain text file, containing this one line:-
Name is <lon_1>, Value is <lon_2>, Description is <lon_3>

The Decoder will output:-
Name is Longitude, Value is 0.301626, Description is 0° 18.0975' N

You can see the tags <lon_1>, <lon_2> and <lon_3> in the template have been replaced with the actual values in the AIS message fields.

Note that in this example as <lon_1> will always translate to Name, in practice you can reduce the processing by making the template:
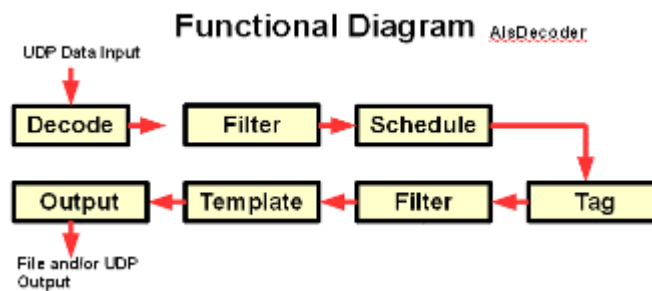**Longitude is <lon_2>**
or if you prefer the formatted longitude
Longitude is <lon_3>

In a similar manner you can select and organise all output in the format of your choice.

See also Template Files

Tagging Overview

Tagging an AIS message field enables the decoded data in the field to be identified and output individually by the name of the tag.
Every Field in every individual AIS message type may be Tagged with a name.

All AIS messages have some fields that are common to all message types. For example every AIS message has the MMSI number of the sender.
Some fields appear in more than one AIS message but not in all (for example Speed), and some fields are totally unique to one AIS message type.
AisDecoder regards every different binary message type as a different AIS message type. This means you can apply a different tag to every field in every DAC,FI and ID combination.

When a field of decoded AIS message is output it is identified by the name of the Tag.

Although all AIS message fields have a default Tag name, you can (and probably will) give the field your own name.

Because the output layout is arranged by the name of the Tag, if you wish a field that exists in more than one AIS message type to appear in the same position when output, you must give the field in each AIS message the same Tag name.

Currently AisDecoder decodes around 1500 different AIS message fields, so mapping these fields to your output layout may not be trivial. It all depends on the data you wish to output.

See also Outputting Tagged Fields

Outputting Tagged Fields

You will need to Tag some AIS message fields if you wish to

Tagged Fields	
Create a Tagged Output File	the Tags in the Template File will be replaced by the value associated with the Tag
Create a CSV Output File	The Tag values will be output as a CSV file
Create a NMEA Output File requiring Output Range Filtering	the NMEA message will be Output Filtered by the Range allowed by the Tag

There are a number of stages to output Decoded AIS Message fields.

1. Display in the Detail Window the AIS message containing the field you wish to output.

2. Select the Field in the Detail Window

3. Rename the default tag name (if required)

4. Create a new tag template file (if required)

5. Add the tag name (if not previously used) to your tag template

6. On the Options Window set the appropriate options to output your tagged fields.

7. Start decoding

See also Character Encoding

Creating Tags

AIS messages consist of a number of fields, it is the value of these fields which AisDecoder is decoding. All these fields and/or values are displayed in the Detail Window. If you left click on any of these fields, you will be asked to create a Tag.

If you click OK you will see the Tag in both the [Field and Tags](#) and the [Tags and Range](#) table. By default he Tag name has _2 appended signifying it has the value in the second column of the Detail Window. If you wished to have the descriptive name "Latitude" output and clicked the first column, the default Tag would be lat_1, Likewise if you wished the formatted Latitude "53° 36.9981' N" to be output and clicked the third column, the default Tag would be lat_3.

The same default Tag name can be generated by differing AIS message types, only you know whether this is the required behaviour. For example Latitude is not necessarily the position of a vessel, it could be defining an area (see AIS message type 22).

It is more likely you will wish to have the latest value of Latitude to be Output when the vessels position is available from more than one message type (see AIS message types 1,2,3). In this case you will need to set a Field Tag for all three message types (1,2 and 3), in each case give the Tag the same name say "lat".

There will be three separate entries in the [Fields and Tags](#) table, but only the one in the [Tags and Range](#) table. You can alter the Tag name before (but not after) you click OK in the Input Field box above.

All differing Tags you have created in the Field and Tags list, will be put in the Output Tags and Range list.

Vessel Names

AisDecoder will extract the vessel name for all AIS messages received which may contain the vessel name - even if the message containing the vessel name is excluded by the input filter.

The vessel name list is re-started each time the Decoder is started and is updated every time a message containing the vessel name is received.
This ensures the vessel name you see is the name that is currently being transmitted.

If you require the vessel name on every CSV or Tagged output (and you probably will), you must tag the vessel name that is displayed next to the Vessel Name in bold, immediately before AIS Message Type on every Detail AIS message type you select for other field tags.

CRC check	15	
Vessel Name	HAPPY FALCON	
AIS Message Type	5	Ship and Voyage

This vessel name is displayed on every AIS message detail, if it has been received, including other AIS message types.

Do not Tag the second Vessel Name (not in bold) on the static data message (AIS message type 5), unless you **only** want the vessel name outputting when AIS message type 5 is output.

Deleting Tags

To delete a **Field** Tag, click on the Tag in the Fields and Tags list.
You cannot edit the tag, you must delete and re-create the Tag.

Msg	DAC	FI	ID	Tag	Name
1				lat_2	Latitude

Delete

Remove field from Output List ?

OK   Cancel
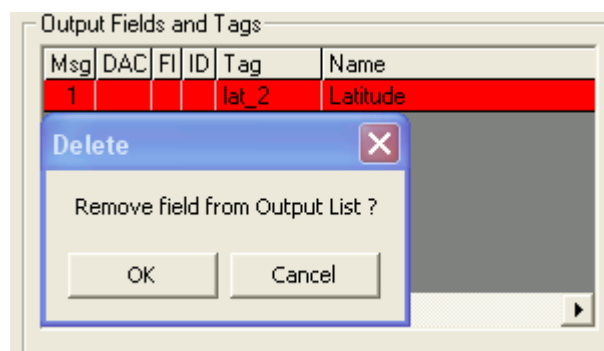
All differing Tags you have created in the Field and Tags list, will be put in the Output Tags and Range list.

You can delete an Output Tag and all Fields with the same Tag, by clicking on the Tag name in the Output Tags and Range list.
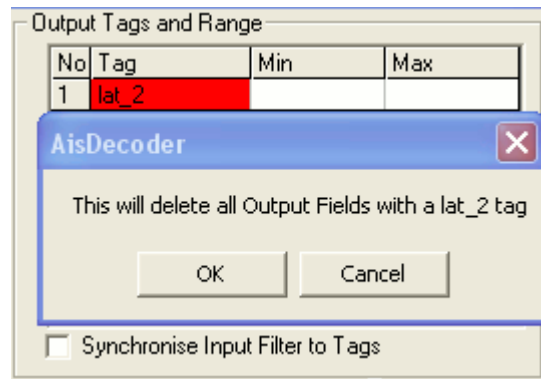
See also Output Fields and Tags, Output Tags and Range

Template Files
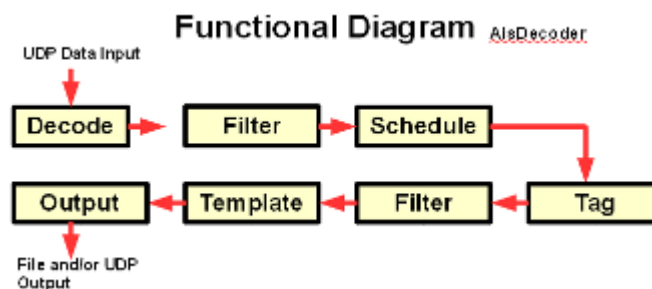
Any tags you have defined will be replaced in the Template with the value of the tag when the Vessel is output to the Tagged Output File. For example if in the Template file you have added a tag <lat>, <lat> will be replaced with the value for the Vessel, so if the latitude of the Vessel was 53.1234, <lat> would be replaced with 53.1234.

The Maximum and Minimum Range values may be inserted into the Tagged Output File by using the tag name with _min or _max appended. For example if the minimum latitude range for the <lat> tag was 53.0, <lat_min> would be replaced with 53.0.

A Special Tag <IconHeading> is created, if GIS has been ticked on output, which will contain the ships Heading (HDG) if it is available, otherwise it will contain the vessels Course Over Ground (COG), this is because some vessels do not output heading and it enables the Icon on GIS displays to be oriented to the COG rather than the Heading (HDG). This conforms to IALA Guidelines on Presentation.

All tags are case sensitive.

Output Range Filtering

You can set a valid output range for any Tag.

Click on the Min or Max cell for the Tag for which you wish to filter the range.

Enter the Minimum, Maximum or both for the Tag.

If Range Filtering is selected as an Output Option, only those MMSI's passing the range check will be output.

If any range is blank, the range check will pass.

You can insert the minimum or maximum Range value into a Tagged Output File.

All Tags are listed in the Output Tags and Range list.

This shows a list of those you will most probably want to output for GIS. Note for all vessels the corresponding Field Tag list will contain approx 50 Tagged Fields.

If using tagged output, Synchronise ensures the decoder will process all messages containing output tags and not process redundant messages not containing tags.

Range Filtered Tagged Output

Output Tags and Range

No	Tag	Min	Max
1	mmsi		
2	rcvtime		
3	vesselname		
4	lat	53.8	54.6
5	lon	-0.3	0.3
6	course		
7	speed		

☑ Synchronise Input Filter to Tags

You can set a valid output range for any Tag.

Output Tags and Range

No	Tag	Min	Max
1	mmsi		
2	rcvtime		
3	vesselname		
4	lat	53.8	54.6
5	lon	-0.3	0.3
6	course		
7	speed		

Edit Tag Output Filter

	Min value
lat - Min	53.8

OK   Clear   Cancel

Click on the Min or Max cell for the Tag for which you wish to filter the range.
Enter the Minimum, Maximum or both for the Tag.
If Range Filtering is selected as an Output Option, only those MMSI's passing the range check will be output.
If any range is blank, the range check will pass.
You can insert the minimum or maximum Range value into a Tagged Output File.

Range Filtered NMEA Output

Extracting Tag values and Range filtering must be done by MMSI because you may select tags or ranges which span two different AIS message types. For example, you may choose to output a vessel's position (AIS message type 1,2 or 3) and at the same time the vessel's length (AIS message type 5). The position is on one message type and the length on another. As it is very unlikely both messages will arrive together, neither message will be output if both position AND

length are required for output.

The primary reason the Scheduler exists is to resolve this problem. The Scheduler retains the most recent message, of each message type, for the "Time to Live", outputting them in batches of the same MMSI.

Range Filtered NMEA Output		
Output Range Filtered	Scheduled	Output
No	No	As received
No	Yes	In MMSI order
Yes	No	Output Range is checked when MMSI changes. Either all or no sentences with the same MMSI are output
Yes	Yes	In MMSI Order, Output Range is checked when MMSI changes. Either all or no sentences with the same MMSI are output

See also NMEA Output Format

Scheduling Output
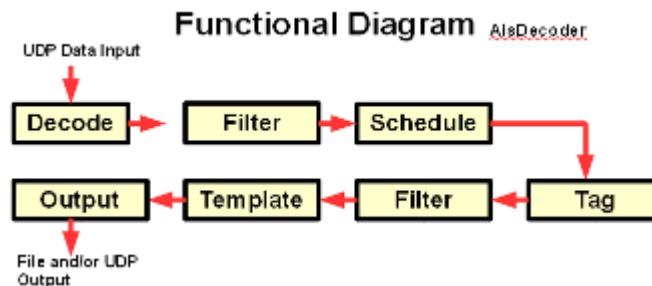
The functional diagram above shows the longest path messages may take before being output. Dependant on your options, messages may miss any or all of the possible stages.

The Scheduler outputs messages in batches at timed intervals in MMSI number order. This allows the data from different AIS message types to be combined together by Vessel. For example, static vessel data such as Length, Beam, Call Sign are transmitted in a different message and at different intervals to navigational data such as Latitude, Longitude. Speed or Course.

The data from these different messages are combined together in one decoded output for the one vessel, which could be one line of CSV data, or one entry in a tagged file.

AIS messages are held in the Scheduler's buffer for a fixed time, the default being 15 minutes. If you are plotting a vessel's position using any GIS system, the vessel will remain on the GIS display for 15 minutes after the last position message was received for any given vessel.

If you are outputting tagged fields, the value of the latest tagged field will be output.

The Output Filter test is normally applied to all the data pertaining to the same MMSI in a block, so all the data for the one vessel is output or no data for the vessel is output.

This behaviour causes a problem if a log file, with no time stamps, is processed by the Scheduler because all the messages for the same MMSI will appear to have been received at the same time. The result is only the last message will actually be output. This behaviour can be changed by unticking the MMSI change box, so all complete messages are processed individually, even for the

same MMSI.

Miscellaneous

This folder contains Miscellaneous Topics

NMEA GPS Sentences

Limited processing of $GPZDA and $GPGGA messages has been added to allow GPS time stamping.

The default tags are the type of NMEA sentence (eg $GPZDA).
Note if trying to output tag values (including CSV), the Tag Value is only output when the MMSI changes, as GPS sentences will not have a MMSI, you will not get any output until an AIS sentence with an MMSI is output, unless the MMSI change option is unticked.

As with all tagged output, the decoder will only output the latest Tag value, if more than one message with the same Tag has been received, since the previous Tag was output.

If you require to see all messages, you should use NMEA output.

Start Up Command Options

Syntax
"C:\Program Files\Arundale\Ais Decoder\AisDecoder.exe" option/option
Note there is a space between exe" and option

Command Line Options	
Option	**Description**
/start	To automatically start decoding on startup
/nowindow	To start the decoder without any windows
/ini=full path and filename	To specify a specific startup initialisation file

Example
To start the decoder without any windows (so you can use it as a server)
"C:\Program Files\Arundale\Ais Decoder\AisDecoder.exe"
start/nowindow/ini="C:\filepath\filename.exe"

User Profiles

If you are the only user on your PC and you installed AisDecoder you do not need to worry about Profiles.

When the Ais Decoder Setup program is run these files (which I have included to to "start you off") are now placed into the "All Users" profile.

The **first** time AisDecoder is run by any user, **all** files currently existing in "\All Users\Application

Data\Arundale\AisDecoder" are copied to "Current User\Application Data\Arundale\AisDecoder". This will include all the above list of sample files as well as any additional files the Administrator may have placed in the All Users profile.
Although the Current User does have access to their own files, by default, files in \Application Data\ are hidden, unless you are an Administrator.
If the current user requires directory access to any of the AisDecoder folders or files, create a shortcut in the user's "My Documents".

After re-installing a new version of AisDecoder (or you have Administrator privilege), when you first run the new version, you will be prompted as to whether you require any of the above sample files which differ from those in your own profile, being overwritten.
If you are not an administrator, they will be overwritten anyway.

The first time a user runs a new version, default.ini is always overwritten in the Current Users profile.

Any user who is not an Administrator, will not be able to access the Options Window so can only change settings on the Control/Stats Window, and cannot save these settings and will not be prompted on exit.

The uninstaller will only remove the downloaded files (in All Users), the "Current User" files will be automatically removed if you delete the "Current User" profile.

Binary Messages

The International Binary Messages are still evolving, all the common ones I believe I have decoded. St Lawrence Seaway, Inland Waterways and most ITU/IMO will be decoded by the program. To see which, click here.

Many binary messages are subject to local interpretation. Potentially there are many thousands of different binary messages possible. I have decoded many of the more common ones, where I can find the requisite information. If you have details of any of the DAC/FI messages types where I do not display at least some of the information, I would be pleased to receive more details.

Output Character Encoding

Characters are output using the normal 7 bit ASCII codes (32-127) for printable characters
All decoded data (Column 2 in the Detail Window) uses these codes.

Formatted Data (Column 3 in the Detail Window) may use the codes in the table 1 below

Table 1 - Decoded Character Set				
Character	**English**	**ASCII Code**	**Output Code**	**Comments**
°	Degree Sign	176	176	
‰	Per Thousand	137	137	Not used
%%	Per Thousand	037,037	%%	Is Used for clarity

Table 2 and table 3 contain the characters that will be replaced in any Tagged Data prior substitution tags in the template file. No substitution is carried out if a Template file is not being used.

Table 2 - HTML, HTM, XML, ASPX Character Replacements

Character	English	ASCII CODE	Output Code	Comments
°	Degree Sign	176	°	
‰	Per Thousand	137	‰	
&	Ampersand	038	&	Reserved in XML
<	Less than	060	<	Reserved in XML
>	Greater than	062	>	Reserved in XML
"	Quote	034	"	Reserved in XML
'	Apostrophe	039	'	Reserved in XML

Table 3 - Additional KML, KMZ Character Replacements				
Character	English	ASCII CODE	Output Code	Comments
=	Equals	061	=	Reserved in Google Earth

Example UDP CSV output with one tag set

Msg	DAC	FI	ID	Tag	Name		No	Tag	Min	Max
1				lon_3	Longitude		1	lon_3		

Output Fields and Tags / Output Tags and Range

Template file is not used because output is CSV

UDP
- ☑ UDP Output
- ☑ Display Output
- ○ NMEA ☐ +Time Stamp
- ● CSV [,] Delimiter
- ○ Tagged ☐ GIS Filtered
- ☐ Scheduled
- ☐ Range Filtered

UDP Output
81.137.214.195 IP
39421 Port

UDP Output [81.137.214.195:39421]
```
0° 29.0190' E
0° 10.1100' E
2° 3.7066' E
0° 16.1879' W
0° 30.4474' E
0° 16.2370' W
0° 17.5000' W
```
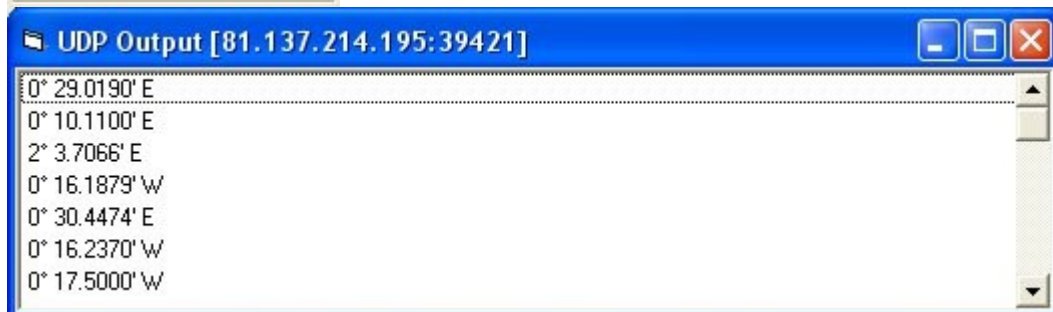
HEX Dump

```
00000000  30 B0 20 32 39 2E 30 31  39 30 27 20 45 0D 0A 30   0. 29.0190' E..0
00000010  B0 20 31 30 2E 31 31 30  30 27 20 45 0D 0A 32 B0   . 10.110 0' E..2.
00000020  20 33 2E 37 30 36 36 27  20 45 0D 0A 30 B0 20 31    3.7066' E..0. 1
00000030  36 2E 31 38 37 39 27 20  57 0D 0A 30 B0 20 33 30   6.1879' W..0. 30
00000040  2E 34 34 37 34 27 20 45  0D 0A 30 B0 20 31 36 2E   .4474' E ..0. 16.
00000050  32 33 37 30 27 20 57 0D  0A 30 B0 20 31 37 2E 35   2370' W. .0. 17.5
00000060  30 30 30 27 20 57 0D 0A                            000' W..
```

If Tagged output was selected - template file would be used

If Template file only contains <lon_3> and NOT named HTML, HTM, XML, ASPX, KML or KMZ
Output would be the same as above.


```
0° 29.0190' E
0° 10.1100' E
2° 3.7066' E
0° 16.1879' W
0° 30.4474' E
0° 16.2370' W
0° 17.5000' W
```

If same Template file WAS named HTML, HTM, XML, ASPX, KML or KMZ
Output would be


```
0&#176; 10.9488&apos; W
0&#176; 11.9730&apos; W
0&#176; 15.6752&apos; W
0&#176; 43.2130&apos; E
0&#176; 34.1036&apos; E
0&#176; 2.8750&apos; E
```

HEX Dump

```
00000000  30 26 23 31 37 36 3B 20  31 30 2E 39 34 38 38 26   0&#176;  10.9488&
00000010  61 70 6F 73 3B 20 57 0D  0A 30 26 23 31 37 36 3B   apos; W. .0&#176;
00000020  20 31 31 2E 39 37 33 30  26 61 70 6F 73 3B 20 57    11.9730 &apos; W
00000030  0D 0A 30 26 23 31 37 36  3B 20 31 35 2E 36 37 35   ..0&#176 ; 15.675
00000040  32 26 61 70 6F 73 3B 20  57 0D 0A 30 26 23 31 37   2&apos;  W..0&#17
00000050  36 3B 20 34 33 2E 32 31  33 30 26 61 70 6F 73 3B   6; 43.21 30&apos;
00000060  20 45 0D 0A 30 26 23 31  37 36 3B 20 33 34 2E 31    E..0&#1 76; 34.1
00000070  30 33 36 26 61 70 6F 73  3B 20 45 0D 0A 30 26 23   036&apos ; E..0&#
00000080  31 37 36 3B 20 32 2E 38  37 35 30 26 61 70 6F 73   176; 2.8 750&apos
00000090  3B 20 45 0D 0A                                     ; E..
```

Configuring Google Earth
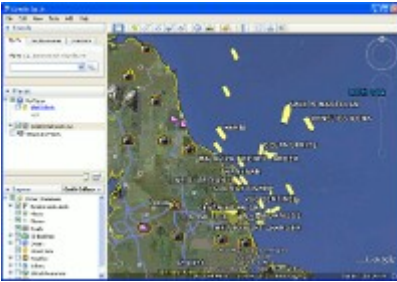
You can configure Google Earth to display your vessels' automatically when it starts.
The file can be on your PC, a PC on the local network or a file on the internet.
You can also set up Google Earth to refresh the view at intervals.
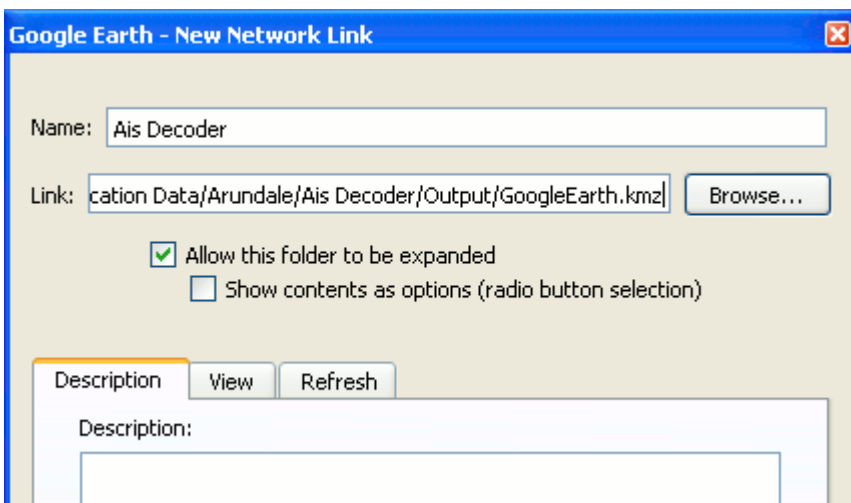Google Earth will normally zoom-in to the area containing your vessels.

Setting up Google Earth to Automatically refresh the vessels
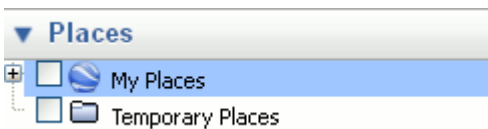
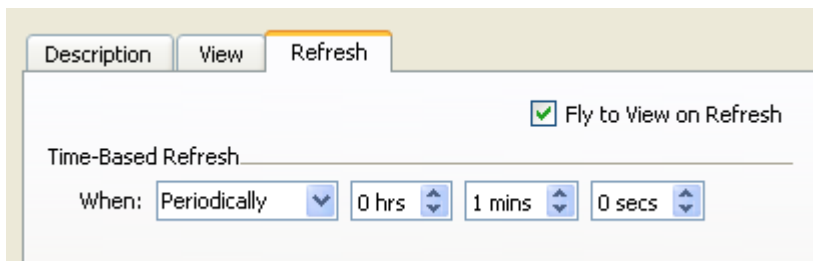**Right Click My Places**
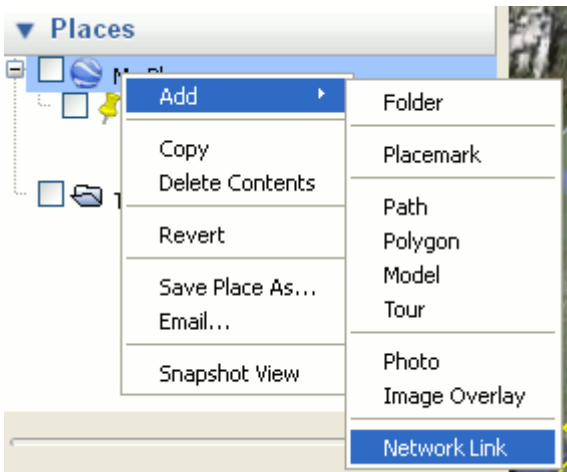
Select Network Link

Insert Name: Ais Decoder
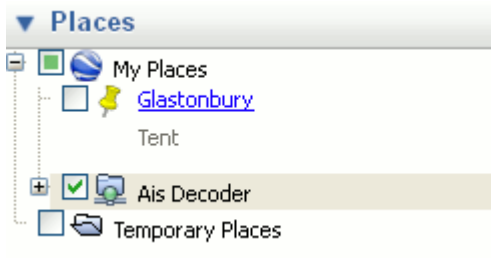**Browse for the link and select \Output\GoogleEarth.kmz**
If you are uploading the file to a Web Server, you can display the page from the internet by
inserting the URL of the Web Server page to display.
Select Refresh Tab

Tick Fly to view on refresh
Set Periodically 1 minute
Click OK
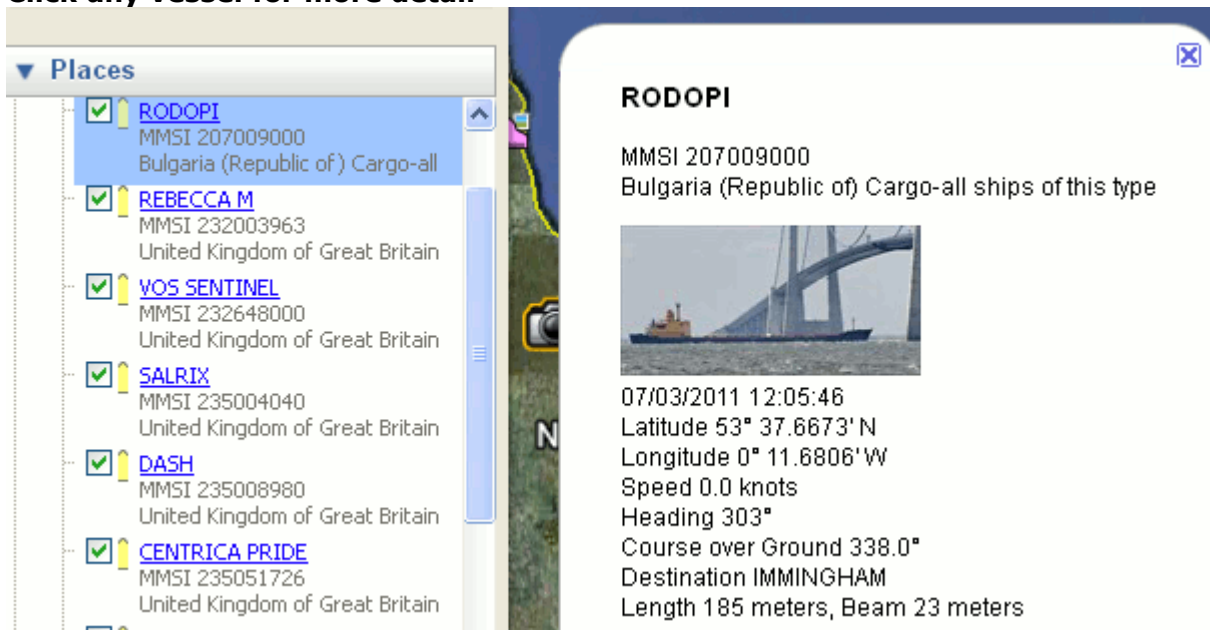You will see Ais Decoder has been added to my places.

Google Earth will update your vessel's position (from the Output File) every minute.
To stop displaying your vessels, untick the box
To list the vessels expand Ais Decoder (click the +)

Click any vessel for more detail

To alter the display format of Vessels
On the Tools Option select Properties

For example to change this size of the vessel names
Tools > Options > 3D View > Choose 3D font
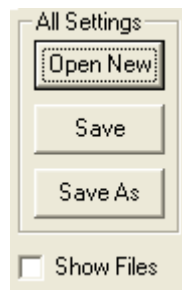Select the required font size

Notes
If when Google Earth "Flies" it displays the whole earth, it is probably caused by a vessel with no Latitude or Longitude being output because:-
1. An error in the Template File

2. The GIS box in Options is not ticked.

See also
Google Earth - Setting

Files and Directories

If you tick Show Files on the Options Window, you will see the file names and locations of all current files in use.
Note that not all files are used all the time, as it depends what you are doing and will not be created unless required, and some files are for my use only.

Name	File Name	Location
Cammand Initialisation File	Not yet defined	Not yet defined
Initialisation File	default.ini	C:\Documents and Settings\jna\Application Data\Arundale\Ais Decoder\Settings
Error Log	Not yet defined	Not yet defined
NMEA Input Log	Not yet defined	Not yet defined
Output File	Test.kmz	C:\Documents and Settings\jna\Application Data\Arundale\Ais Decoder\Output
NMEA Output File	output.nmea	Not yet defined
CSV Output File	output.csv	Not yet defined
Tagged Output File	data.kml	Not yet defined
Vessels File	Vessels.dat	C:\Documents and Settings\jna\Application Data\Arundale\Ais Decoder\Files
TrappedMsgs File	Not yet defined	Not yet defined
Template File	data.kml	Not yet defined
Overlay Template File	Not yet defined	Not yet defined
Overlay Output File	Not yet defined	Not yet defined
NMEA Input File	Not yet defined	Not yet defined
Startup Log	.AisDecoderStartup.log	C:\Documents and Settings\jna\Local Settings\Temp
Exit Log	Not yet defined	Not yet defined
Local FTP File	Test.kmz	C:\Documents and Settings\jna\Application Data\Arundale\Ais Decoder\Output
Remote FTP File	Test.kmz	my.server.com/mydirectory

Glossary

	Glossary	
ITU	International Telecommunication Union	Allocates the radio spectrum and sets standards
IALA	International Association of Lighthouse Authorities	Standards for navigation and pilotage
AIS	Automatic Identification of Ships	
UAIS	Universal AIS	Extended AIS - principally binary messages (USA)
NMEA	National Marine Electronics Association	Standards for communication between wired electronic ship device
RAIM	Receiver Autonomous Integrity Monitoring	AIS Receiver monitors electronic position fixing device
DSC	Digital Selective Calling	Selectively call one (or many) station from another station
TDMA SOTDMA ITDMA CSTDMA RATDMA FATDMA	Time Division Multiple Access Self Organising TDMA Incremental TDMA Carrier Sense TDMA Random Access TDMA Fixed Access TDMA	It allows for large numbers of transmitters to share one single narrow band radio channel, by synchronizing their data transmission to an exact timing standard (GPS) There are a number of different methods used to allocate and synchronise "slots". A Slot is a time slice used by the transmitter and receiver of the data.
GNSS	Global Navigation Satellite System	Any type of GPS
MMSI	Maritime Mobile Service Identifier	Unique number to identify a ship or coast radio station
EPFD	Electronic Position Fixing Device	
DTE	Data Terminal Equipment	Ais tx/rx & associated equipment
SAR	Search and Rescue	
SART	Search and Rescue Transponder	Automatic Emergency Beacon
CRC	Cyclic Redundancy Check	Checks integrity of Nmea message
MID	Maritime Identification Digits	The part of the MMSI identifying the home Country or base area. For an up to list see here

tx/rx	Transmitter/Receiver	
IAI	International Application Identifier	Binary Message header consisting of the DAC and the FI
DAC	Designated Area Code	Geographic area for the binary application (1=international, normally the MID)
FI	Function Identifier	Type of binary message
IEC	International Electrotechnical Commission	Electrical Standards, in particular for AIS inter-equipment NMEA formatted messages
ENI	European Vessel Identification Number	Unique European inland waterways vessel identification number (similar to MMSI)
EMMA	European Multiservice Meteorological Awareness system	Standards for weather warnings & symbols
GIS	Geographic Information System	Any system for plotting data on a map - eg Google Maps, Google Earth