

***AirNav* 3.1 Ó**

**Internet, ACARS, HF and VHF
Flight Tracking and Monitoring**

USERS GUIDE

www.airnavsystems.com

AirNav Users Guide is MS Word 6 doc file
It's suggested to print this Manual using MS Word.

***AirNav Manual is a general approach to all AirNav features.
For detailed Help on each AirNav window use the provided Online
Help (clicking F1).***

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Introduction

System Requirements

- Operating System: Windows 95, 98 or NT.
- Disk Space: AirNav requires about 30 Mbytes of disk space.
- CPU: 486 66 MHz or higher.
- RAM: 8 Mbytes or higher.

AirNav main features

- **ACARS Realtime Monitoring and Tracking**
AirNav is the most sophisticated program to be used by the ACARS enthusiast. Compatible with all the current available ACARS decoders (commercial, shareware and freeware) you will get the most of all ACARS messages received. And all in realtime! Each message received will be completely checked and interpreted in order to give you detailed information on its contents.
- **Internet Tracking**
It is now possible to download updated flight data from the Internet. With just one mouse click you will be able to download updated data for more than 300 flight each hour.
You will get on your Screen all the flights that send meteorological reports not only by voice (HF) but also using AMDAR (by satellite).
- **Azimuthal Maps**
One of the most impressive new features. You will have spectacular views of the skies, mainly in latitudes higher or lower than 40 degrees (Europe, USA, North Atlantic and Pacific). This feature will easily show you why flights between Europe or USA and the Far East use so many times polar routes.
Using Azimuthal maps and data downloaded from the internet you will be able to get a very detailed view of intercontinental flights all over the world.
- **Electronic Flight Progress Strips**
Based on real life ATC centers you will be able to easily get in touch with all used slots with the new Electronic Flight Progress Strips window. Older ATC centers still use the classical flight progress strips in paper but new ATC centers are switching to the easy-to-use Electronic format.
So you will be able to see flight information the same way real-life controllers do. Each strip has information on flight number, aircraft type and registration, flight level, mach, previous and next waypoints and times over them.
You can sort the strips by many different parameters in order to easily access each flight. Using this feature you can easily access Flight Management mode and other AirNav features with only one mouse click.

- **Revised All Heard Management**
The new All Heard Management feature could be considered a program inside another program.
You will be able to see what aircrafts have been contacted (using the HF radio, ACARS or even seen), all contact details such as First and Last contact dates and aircraft details (type, company and selcal).
This feature is based on an highly accurate aircraft database renewed each 2 months.
You will also be able to see the remaining flights by company and aircraft type: for example, what British Airways 747's haven't been contacted yet?
Many statistics are included giving you, for example, information on the most contacted aircraft type or company.

- **32 bit Application**
AirNav is a really fast and robust application.
Sometime you will have more than 1000 flights being tracked simultaneously.
Fast and efficient routines enable the calculations to be made in a very fast way in order for you not to even know that they are being made.
All previous version routines have been revised and many of them have been completely rewritten in order to accomplish the always difficult task of maintaining program efficiency and robustness.

- **Other New Features**
 - Completely renewed Database explorer making it much more easy to use.
 - Automatic Label Overlap avoidance: this is, in the author's opinion, the most sophisticated routine of the new version. With only one click (and almost all the times even without it!) all the overlapped aircraft labels will be rotated and resized in order to give you a clear view of the skies of the globe.
 - ACARS Quick view panel: you will be able to see ACARS message being received in a small part of the screen in order to open as many map windows as possible.
 - Desktop saving: to save your preferred desktop organization.
 - Standby flights: flight waiting for next waypoint information can be kept on the screen.
 - Flight Management Mode renewed interface: it looks like a real life Flight Management Computer.
 - New Log file format: in order to accomplish with the greater number of flight to be tracked.
 - Completely renewed Help File matching Windows 95 and 98 directives.

Here is a list of V2.10 main features (all maintained or renewed for version 3.0):

- **Multi-Window Tracking**

Latest Version main feature is the Multi-Window Tracking capacity: every window is resizable and you can open as many maps or vertical tracking windows as you want. Because of that it's now possible, for example, to see traffic simultaneously in many zooms enabling you to get a complete overview of what is passing in the skies of the globe.

- **All Heard Management**

The program also includes an All Heard Management feature which will maintain a completely detailed database of all aircrafts you have ever heard on HF (not only using AirNav).

- **Dynamic Aircraft Labels**

Using the new rotating and resizable labels makes possible to avoid label overlap.

- **Vertical Tracking - tracking by altitudes and routes**

Completely new and innovative features such as Vertical Tracking enables the user to understand airspace flight level organization. After the user selects a route, traffic will be shown by flight level enabling you to monitor altitude organization under any route.

- **Security Circle feature**

Security circles will help you monitoring near-misses. Small circles/ellipses will be drawn around an aircraft representing the minimum horizontal and vertical distance other traffic should be.

- **Innovative drawing features**

Its also possible to draw all kinds of airspace and flight related data, from weather to routes, from ATC centers to a 160000 digitalized map provided.

AirNav maps can also be edited in your preferred Image Editor.

- **Terminal and Flight Management Mode**

Once aircraft data is inserted via Terminal Mode or Flight Management Mode the program will calculate with high precision and display an aircraft label instantaneously on the globe position where it is.

The program enables you, using Flight Management Mode, to see all flight development details. This feature was based on Airbus flight management computer display.

- **Faster and more accurate tracking functions**

All tracking functions were completely reviewed to enable the use of up to 1000 flights simultaneously. Aircraft position determination functions are now much more precise and faster.

- **Waypoints and times automatic estimation**

Within AirNav you can estimate any flight waypoints and times. The program includes 9 detailed databases which are editable and searchable using the provided Database Explorer.

- **More than 80 user preferences**

You have the possibility to make the program work as you want by selecting one of the many user options available. For example, it's possible to select if you wish the program to automatically estimate next waypoint times or not.

- **User Defined map**

It's possible to add any lines to AirNav's digitalized map by using this feature.

- **7 ways of creating maps**

You can create a new map using a scanned bitmap, downloading it from AirNav homepage or using one of the provided 70 Pre-defined maps. Also it is possible to create a map using 4 more alternatives.

- **Weather Database**

You can maintain a database of weather conditions: wind speed and direction, temperature and turbulence data.

It is possible to draw weather data over the maps.

This feature was based in real flight meteorological charts.

2 Installation

Running the Install

Run the SETUP.EXE from the downloadable .zip or CD-ROM.
You will be asked if have already V2.10 installed. If affirmative, your old databases will be automatically upgraded to V3.0.
Borland Database Engine will be automatically installed during the setup.

To enter your registration codes:

- 1-Run AirNav.
- 2-Go to the Help menu.
- 3-Click over 'Register Topic'.
- 4-Type your registration codes.
- 5-Click Register button.

3 Getting Started

Quick Start

If you want to see what AirNav is capable of doing without further reading, this section is for you.

Anyway it is highly suggested to read AirNav Tutorials to have a quick detailed explanation of all AirNav features.

Downloading Internet Data:

- 1-Click F3. The Internet Interface window opens.
- 2-Open a map called 'North Atlantic' to see the flights downloaded from the Internet (Maps menu, Open map).
- 3-After Internet Interface Window closes you will see the aircrafts on the screen.

Get data from an ACARS decoder:

- 1-Open the ACARS Realtime Interface Window by clicking F2.
- 2-Select, from the source data menu, a decoder from which you want to receive ACARS data.

Tutorials

AirNav Tutorials were made with real life aircraft traffic in order to make them as real as possible.

They will give you detailed information on how the program works.

It is the easiest way to learn on how to work with AirNav.

It's highly recommended to play the Tutorials in order to understand AirNav.

The Tutorials have a logical order which should be followed.

Each Tutorial contains the following options:

- 1- **Step by step tutor** which will open the appropriate help topic and will guide your through the AirNav lesson.
- 2- **See Done** which will show you what you will see at the end of each Tutorial.
- 3- **Reset Tutorial simulation** will make the program revert to the state it was in before running the Tutorial.

Tutorial 1 - Internet

Tutorial 1 - Understanding the Internet Interface and to work with it. Open Maps.

- 1- Close all opened windows. [Window|Close All]

2-Be sure your UTC time is correctly set. You can see the time in the right bottom of AirNav main window. If it is wrong set your PC time and time zone by going to Set System Date and Time [Utilities]Set System Time and Date].

3-Now you are going to download updated flight data from the Internet. If your connection is not active, AirNav will open it for you.

4-Go to the Utilities menu, Internet, Download Updated data now.
[Utilities]Internet[Download Updated Data Now]

5-A small window will appear showing you downloading progress. Please be patient as sometimes it could take up to 3 minutes to download the data. Usually more than 300 flights from all over the world are downloaded. What you will see after this is worth waiting for. While you wait for the data to be downloaded, continue reading topics 6 and 7 of this Tutorial.

6-After the data is downloaded, it will be converted to AirNav format and correctly inserted into AirNav slots. The progress of this action can be seen in the 'Processing Data' progress bar. Sometimes it takes a few minutes but please be patient.

7-Now you are going to open some maps to see the flights that will be downloaded. AirNav comes with some saved maps. To open them, go to the Maps menu and click Open Map. Then open the 'Pacific' and the 'North Atlantic' maps. After this click Window menu, Tile Vertically. You can open as many maps you want as AirNav supports multi-window tracking.

8-Wait until AirNav finishes processing the downloaded Internet Data. After this you will see all downloaded flights on the maps you opened.

9-To have a general overview of the flights, open the Electronic Flight Progress Strips Window [Track]Show/Hide[EFPS]. This feature is based on real ATC Center flight progress strips.

10-That's all for this Tutorial. Click continue to read and learn about the [ACARS Interface](#). The other tutorials will show how to manually enter data, create and draw maps and Vertical Tracking windows and maintain a database of All Flights Heard.

Tutorial 2 - ACARS

Tutorial 2 - Working with the ACARS Realtime Interface, Importing Data from ACARS log files, add Heard flights to the All Heard Management.

1-Open the ACARS Interface Window: go to Utilities menu and click 'ACARS Realtime Interface'.

2-It is assumed you are using an ACARS decoder software which will receive ACARS data from a scanner using the Sound Blaster or a simple converter. This decoder program writes the received data to a file on the hard disk or uses DDE, or even both.

3-AirNav can receive ACARS data from a decoding program in two ways:

- a) Using Windows DDE (supported by Lowe Airmaster and Persivell SkySpy).
- b) Using FWD (File Write Detection): AirNav detects when your decoding program writes the received data to a file, and intercepts it. This will work with all decoding programs.

AirNav can receive data from more than one decoding program simultaneously so you can feed AirNav with as many sources as you want.

You can even import that data from any previously created ACARS log file.

4-Each time a new message is received, a new line will be added to the 'Live Data Grid' of the ACARS Realtime Interface. Each record of the 'Aircraft List Grid' represents a different aircraft/flight received and will have detailed information on it.

5-Live Data Grid:

Data contained in the columns is as follows:

From the first to the last column:

- A letter representing the decoder program that send the data (each decoder program as an unique letter that can be seen between '()' in the Source Data menu).
- If AirNav has detected errors in the message, the second column will have a 'X'.
- The third column will have an arrow if the message in an uplink.
- The fourth column will have a small blue globe if the message has position information (the flight will also be tracked).
- Date and Time for the received message.
- Registration of the Aircraft that sent the message.
- Aircraft Type and Company
- Flight Number.
- Further columns: ACARS Mode, Message Label, Block ID, Message No.
- The Last columns shows the message contents.

In the bottom of the Grid you can see Ground Station being used, the Message Content and Message Explanation of the received message.

There are also the navigator buttons for you to scroll the Live Data Grid easily: from the left to right, First, Previous, Next, Last and Update Records.

6-Aircraft List Grid:

Data contained in the columns is as follows:

From the first to the last column:

- If it is the first time you are listening to the aircraft (new registration in the All Heard Database), a small yellow indicator will be shown.
- If there are messages for this flight that contain routing information, the aircraft will be tracked and this column will have a small blue globe.
- RAV each of these columns will become green if you have already contacted the aircraft. R means Radio (you have listened to the aircraft), A means ACARS (you have already received this aircraft with ACARS) and V is Visual (you have seen the aircraft).
- The fifth column will have the number of ACARS messages received from this aircraft.

- Then there are the Last time for a received message from this aircraft, Registration, Aircraft Type, Company, Flight Number, Flight Routing (Origin and Destination Airports), the last date you listened to the aircraft and the first time you received an ACARS message today.

At the bottom you can find the complete name of the company, flight number and origin and destination airports in complete names.

Also at the bottom, a count of all received message is shown.

There are also navigator buttons for you to scroll the Live Data Grid easily: from the left to right, First, Previous, Next, Last, Delete, Post, Cancel and Update Records.

7-Now that you have an overview of the ACARS Interface Window, you are ready to start importing data from ACARS decoding Software.

Go to the 'Source Data' menu, and click the program you want to use as data source. If you choose DDE (available only for Airmaster and SkySpy) the connection will automatically be established. If you select FWD, you must select the file that is being used by the decoding program.

8-At this time, received messages will be displayed by AirNav. If they contain position information, the aircraft will be tracked in any opened map. AirNav comes with maps for many areas of the world.

Tutorial 3 - North Atlantic

Tutorial 3 - Understanding how to insert data using Terminal Mode and Flight Management Mode. Basic drawing features. Aircraft label orientation and size.

1- Close all opened windows. [Window|Close All]

2-Open file tutorial1.anl. [File|Open Log]

3-Set UTC Simulated date and time to 03:08, Mar 22th:

Go to the 'Utilities' menu, and click 'Set System Time and Date'.

'19980322' in the Date box and '030800' in the Time box.

(Note that AirNav always use this time and date format - 'hhmm' 'yyyymmdd')

Select Simulated Date/Time [Utilities|Set UTC Simulation Time/Date].

Check the checkbox 'Use simulated time/date'.

4-Open the map file with the name 'NorthAtlantic.map'.

'Maps Menu|Open Map' and select 'NorthAtlantic.map'.

5-At this time you will see aircraft traffic crossing the North Atlantic on the night of 22 of March, 1998.

Next, you will be shown how to insert aircraft data using Terminal Mode.

You will insert data for flight 'KLM758' which is routing from Curacao to Amsterdam.

6-Set focus (click) on one of the green edit boxes on the bottom of the screen.

8-On the radio you hear the KLM pilot giving a position report:

'Shanwick KLM758 position'...'KLM758 50 North 20 West 0254 Flight Level 360
estimating 52 North 15 West 0318 next Dolip, Selcal AGRS'.

In the green edit box in the bottom of the Screen you should type:

'KLM758 50N20W/0254 F360 52N15W/0318 DOLIP/ SAGRS'

(This is an easy-to-understand syntax which is explained in detail in [Entering Data via Terminal Mode](#) topic)

After typing the info above click the button in the right of the green box or just press the Return key.

KLM758 will be plotted on the map and will move Eastbound towards Ireland.

AirNav accepts position specification using Geographic Coordinates - click here to learn more about it - or by position name (it includes a waypoint database with more 31000 VORs, NDBs and FIXs - all the existing world waypoints!)

9-You can see that the KLM758 label became white. This is because this is the current active slot. Now move the cursor to over the KLM758 label. A small box with detailed flight info automatically opens. Now and still with the mouse over the flight, click your mouse right button. A small drop-down menu appears with many features related to this flight.

10-In the drop-down menu select 'Draw Route|With Comment'.

The flight route will be drawn.

11-Again, open the drop-down menu for KLM758 and now click 'Edit (Flight Management Mode)'.

You can do this also by pressing F5. The Flight Management Mode Window will be opened for the current active flight.

12-This is an alternate way to insert flight data into AirNav.

This feature lets you perform many operations in each slot (using the menu) and also see aircraft route development with Waypoints and times, Fuel, Distance, Bearing, Ground Speed and much more.

All white fields are editable. Green are not.

13-Now you are going to make AirNav estimate the time for DOLIP position.

On the Flight Management Mode Window Menu click 'Edit|Estimate Times'.

That's it. DOLIP time is estimated and you can continue to track the flight to this waypoint.

Close Flight Management Mode Window.

14-It's time to cover in detail AirNav's drawing capabilities.

15-Let's draw the ATC boundaries to see how the traffic is organized.

To do this click the menu 'Maps|Draw|ATC|Boundaries'.

16-Now let's draw the weather over the North Atlantic.

Click 'Maps|Draw|Weather'.

This feature was based in real SABENA Meteorological Information.

17-Note that within AirNav aircraft labels can be oriented and resized.

Go to [Avoid Label Overlap](#) topic for more information.

18-To finalize this Tutorial you are going to export the AirNav current log file to a TXT file.

To do that just click 'File|Export Log to TXT|Detailed Log'. Choose the name of the file and answer yes to the dialog box to edit the created file with an external text editor (Could be specified using Edit|Preferences|Associated Programs).

19-That's all for this Tutorial.

Tutorial 4 - Africa

Tutorial 4 - Map creation features. Multi Window Tracking. All Heard Management. Utilities Menu.

1-Close all opened windows. [Window|Close All]

2-Open file tutorial 2.anl. [File|Open Log]

3-Set UTC Simulated date and time to 23:15, Mar 13th.

Select Simulated Date/Time [Utilities|Set System Date and Time]

Date value must be '19980313' (yyyymmdd).

Time value '231500' (hhmmss).

Check the checkbox 'Use simulated time/date'.

4-Start aircraft tracking if it isn't yet started [Track|Start Tracking]

You can start/stop tracking by pressing F12 and see if the small rectangle in the bottom of Terminal Mode is green (tracking) or red (not tracking).

5- As you will not use Terminal Mode during this Tutorial, click F5 to hide Terminal Mode toolbar.

6-You have now a complete view of aircraft heard on the frequency of 8903KHz where Kinshasa, Libreville, Bangui, NDjamena, Luanda and other African ATC Centres work at night.

This is a interesting Tutorial because you are perhaps the only person to really 'see' this traffic since these centers do not use radar or any Simulation Software to track aircraft.

7-Now you are going to create a map to see in detail the traffic over Gabon.

You are going to use one of the 7 ways you have to create a map within AirNav, called 'Tabular Map'...you specify the map top and bottom latitudes and left and right longitudes. Click 'Maps|New Map|Tabular Map'.

Specify the following coordinates:

Top Map Latitude 'N02 00.0'

Bottom Map Latitude 'S06 00.0'

Left Map Longitude 'E008 00.0'

Right Map Longitude 'E014 00.0'

Then click OK. After the map is created you will be asked: 'Draw the digitized map now?'

Answer yes and then deselect all areas to be drawn except Africa.

Click OK and wait until the map is drawn.

8-To see simultaneously the two maps on the screen click 'Window|Tile Vertically'.

Now you have a detailed view of traffic over Gabon and Northern Congo and also a panoramic view of African traffic. Move the mouse over the traffic in Gabon region and you will see that the active slot (white aircraft label) will change in all windows.

9-To draw the flight routes on a map, click 'Maps|Draw|Routes|Flight|With Comment!'. A small dialog box will appear...check 'All Slots' and click OK. You can see the traffic following its route.

10-Now you will see if the controllers are doing a good work in separating traffic.

You will enable the Security circle feature which represents the minimum horizontal distance between two aircraft.

(Within Vertical Tracking feature - next Tutorial - there is also a Security Circle feature but that represents minimum vertical separation).

To enable this feature click 'Edit|Preferences|General' then check the 'Show Security Circle' checkbox.

11-Note that the minimum distance could be specified also using 'Edit|Preferences|General'.

12-Lets now take a look to the Utilities menu.

This menu has many tools that will make the task of tracking aircraft easier.

13-AirNav will keep a database of all aircraft you have heard when using the program. Also aircraft heard without using AirNav could be inserted in this database.

This feature is called 'All Heard Management'.

To open it click 'Utilities|All Heard Management'.

14-This window is divided in a grid where you can see/scroll all heard flights. Each record has many fields that will save all info concerning the flight you have listened to.

Also there is an area where you can search/make statistics/add aircraft to the database.

If you insert a selcal or registration of a flight, the database will be automatically updated and you will receive the info if the aircraft was/was not already in the database.

If you followed correctly T 3 steps you can now see that KLM758 MD11 with registration PH-KCH was inserted in the database. You can edit records at any time using the database navigator button at the bottom of the window.

15-When a registration is not found in the Aircraft Database the flight will be added with all necessary details to the notes memo box in order to be manually added in the future.

16-Close the 'All Heard Management' Window.

17-It's time now to have a quick look to the other Utilities Menu Topics.

Database Explorer lets you manage all databases maintained by AirNav.

User Defined Map makes easier the task of adding lines and labels to AirNav maps.

Program Statistics as the name says, gives you statistical information on AirNav usage.

Frequency Information will help you choosing what frequency to listen to aircraft communications.

Distance and Bearing lets you calculate distance and bearing between locations on the earth surface.

Set System Time and Date lets you manage the Time and Date AirNav uses.

Tutorial 5 - South Atlantic

Tutorial 5 - Working with Vertical Tracking Feature

1-Close all opened windows. [Window|Close All]

2-Open file tutorial5.anl. [File|Open Log]

3-Set UTC Simulated date and time to 02:20, Feb 25th.

Select Simulated Date/Time [Utilities|Set System Date and Time]

Date value must be '19980225' (yyyymmdd).

Time value '022000' (hhmmss).

Check the checkbox 'Use simulated time/date'.

4-Start aircraft tracking if it isn't yet started [Track|Start Tracking]

You can start/stop tracking by pressing F12 and see if the small rectangle in the bottom of Terminal Mode is green (tracking) or red (not tracking).

5-Now you are going to create a new Vertical Tracking Window.

6-Click 'Vtrk|New Vtrk'

7-Set Lower Altitude to 290 and Higher Altitude to 410 (lower and higher flight levels to be tracked).

Set the zoom to default values by clicking default button.

8-Specify the route to be vertically tracked by clicking 'Import Waypoints from pre-defined route'.

9-Select the route 'UA32'.

10-Click OK.

11-A new window has been created displaying Vertical Tracking for route UA32.
Note that opposite direction traffic is displayed in different colors.
You can set this and other vertical tracking options by using 'Edit|Preferences'.

12-Arrange the two windows by clicking 'Window|Tile Horizontally'

13-You can also draw route UA32 on the map by right mouse clicking it and then clicking Draw|Routes|Pre-defined|Select|With Comment.
Select route UA32 and the route will be drawn.

14-Look to see if security circles in vertical tracking overlap. If this occurs, it could indicate an erosion of the required minimum separation standards.

15-At anytime you can format your Vertical Tracking Window by clicking 'Vtrk|Format Vertical Tracking'. For more info [Click here](#)

16-Now you are going to save this vertical tracking window in a file called 'UA32.vtk'.

17-Click 'Vtrk|Save Vtrk' and the file with the name 'UA32.vtk'.

18-That's all for this Tutorial. Click continue to read and learn [Tutorial 6](#)

Tutorial 6 - South America

Tutorial 6 - Preferences. Active Frequency. Export to TXT.

1-This is the latest AirNav Tutorial.

Don't forget that it's highly recommended to read program tips (click 'Help|Tips').
Also by clicking F1 the appropriate help window will be opened with complete explanations and information.

2-Close all opened windows. [Window|Close All]

3-Open file tutorial6.anl. [File|Open Log]

4-Set UTC Simulated date and time to 04:03, Mar 22th.
Select Simulated Date/Time [Utilities|Set System Date and Time]
Date value must be '19980322' (yyyymmdd).
Time value '040300' (hhmmss).
Check the checkbox 'Use simulated time/date'.

5-Start aircraft tracking if it isn't yet started [Track|Start Tracking]

You can start/stop tracking by pressing F12 and see if the small rectangle in the bottom of Terminal Mode is green (tracking) or red (not tracking).

6-Draw ATC boundaries (Maps|Draw|ATC|Boundaries)

7-Draw All ATC centers without range (Maps|Draw|ATC|Centers|All|Without Range)

8-Note that the majority of traffic is within the Manaus Center area, which can be heard on 8855KHz.

You can specify this as the active frequency by clicking Track|Active Frequency.
All aircraft you enter after this will be recorded as heard on this frequency.

9-Now open file tutorial6.vtk. To do this go to 'Vtrk|Open Vtrk' and then choose file tutorial6.vtk

10-Arrange the two windows by clicking 'Window|Tile Horizontally'.

11-Now we are going to change some preferences in order to automate some program functions.

12-Open AirNav Preferences Window in the General section (Edit|Preferences|General).

13-Check the following checkboxes:

- Auto Estimate Times
- Auto Estimate Waypoints
- Auto Draw Flight Routes with Comments

Click OK button in the bottom of the Preferences Window.

14-After doing this, when you enter some data for an aircraft, AirNav will automatically Estimate Times and Waypoints and draw its route on the map. Note that for estimating next en-route waypoints there must be an appropriate pre-defined route in the routes database. That's the case for the flight you will enter data next.

15-Open Flight Management Mode for slot 15, VRG814 (F6 and then select slot 15).
Look that this flight only has two waypoints now.

16-Enter via Terminal Mode, the following data:
'VRG814 DARLO/0502'.

17-See that the flight now has 5 waypoints (estimated by AirNav) and their associated times. Its route was also drawn on the map.

18-That's All for this Tutorial.

4 Using the Program

AirNav and the Internet

Introduction

AirNav can now import worldwide data directly from the Internet.

The data is downloaded from a meteorological ftp server that receives flight updates from many ATC centers all around the world.

Usually more than 300 flights are received each hour.

How does it work?

When you click 'Download Updated Data Now' AirNav will contact the Internet URL with the updated flight information and download the data.

Then it will decode the downloaded data and add the flights to AirNav slots.

Usually it takes between 2 and 5 minutes to perform these actions and to display all the flights.

What flights will be shown?

Almost all flights flying intercontinental routes that give meteorological information (usually 80-90% of them).

You will be able to see:

- North Atlantic airspace
- Pacific airspace:
- Flights between USA West coast and Hawaii
- Between USA and Asia
- Between Australia and New Zealand
- Australia Domestic
- Flight between Europe and the Far-East
- Many other domestic and intercontinental flights when the aircraft is equipped with AMDAR

Why is no payment required for this service?

Because what you will see is not realtime tracking but semi-realtime. All flights will be shown with a minimum delay of 10 minutes.

However, you will still be able to understand flight routings all over the world and see highly detailed information for each flight.

For more information on how to download the data don't forget to read [Tutorial1](#) and [Internet Interface](#) topics.

Internet Interface

This is a small window that will show you Internet connection details.

It can be accessed by clicking F3 or going to the Utilities menu, Internet, Download Updated Data Now.

The first label and progress bar will indicate the file being downloaded (1/9 means file one of a total of 9). When the progress bar reaches 100% the indicated file has been completely downloaded.

The second progress bar will be active after all the files have been downloaded. It will show you the progress of the data conversion into AirNav of the downloaded files.

For more information on how to download the data don't forget to read [Tutorial1](#).

AirNav and ACARS

Introduction

Within AirNav you will be able to monitor in Realtime ACARS messages received by an external ACARS decoder.

All ACARS related features can be found in an AirNav Window called '**ACARS Realtime Interface**'.

This window can be opened by clicking F2 or by going to the Utilities menu, and click 'ACARS Realtime Interface' [Utilities|ACARS Realtime Interface].

But first you are recommended to read this topic.

Then follow the link at the bottom of this page.

AirNav is compatible with the following programs:

- Lowe Airmaster 2000
- Lowe Airmaster 3.x
- Persivell SkySpy
- Kracars
- Wacars
- ARD-2
- Any other decoder that generates Airmaster compatible message labels.

How does AirNav receive the ACARS messages from these programs?

- Using DDE (Dynamic Data Exchange). Currently there two programs that support DDE: Airmaster 2000 and SkySpy. When a new message is received by the decoder program, it sends that message to AirNav using a DDE link.
- Using FWD (File Write Detection). This will work with any available decoder, even with those that use DDE. First you need to specify what log file is being generated by the ACARS decoder. After this, when a new message is received, AirNav will know when the decoder is writing the message to the log file and will read it. This makes possible the use of AirNav with Freeware ACARS decoders such as Kracars and Wacars. Please note that the log file must be Airmaster compatible (explained below).

What is an Airmaster compatible log file?

It is a file that has ACARS messages in the following format:

```
ACARS mode: 2 Aircraft reg: .N374AA
Message label: 10 Block id: 9 Msg. no: 3644
Flight id: AA0998
Message content: -
IS MIA /FQY31550
```

All the programs specified above have the capability of generating log files compatible with this format.

If you have any problem concerning this, please consult your ACARS decoder documentation or email to info@airnavsystems.com

So it's time to start learning in detail how to work with [ACARS Realtime Interface](#). Don't forget to also read [Tutorial 2](#) which explains how to work with AirNav's ACARS Interface.

ACARS Realtime Interface

This topic describes in detail the 'ACARS Realtime Interface' window.

This window can be opened by clicking F2 or by going to the Utilities menu, and click 'ACARS Realtime Interface' [Utilities]ACARS Realtime Interface].

'ACARS Realtime Interface' window is divided into 4 main areas:

- 1-Live Data Grid (on the left side of the window)
- 2-Aircraft List Grid (on the right side of the window)
- 3-Status Bar (on the bottom of the window)
- 4-Menu (on the top of the window)

1- Live Data Grid:

Each time a new message is received, a new line will be added to the Live Data Grid.

Each line has the following information for each received message:

- **Data source:** A letter that identifies the source that generated the message. This letter can be seen between () in the Source Data menu. For example: a '2' means that the data was generated by Airmaster 2000.
- **Erroneous message:** A 'X' will appear in this column in AirNav detected errors in the message.
- **Uplink/Downlink:** An arrow pointing upwards will be drawn in this column if the message is an uplink. Not available when using some decoders.
- **Tracking Indicator:** A blue globe will appear if the message has position information. The flight will be tracked.
- **Date:** Date of the received message in local time.
- **Time:** Time of the received message in local time.
- **Regist:** Registration (tail-number) of the aircraft.
- **Type:** Aircraft type. This value is returned from AirNav's Aircraft database.

- **Comp:** Company operating the aircraft. This value is returned from AirNav's Aircraft database.
- **Flight:** Flight Number.
- **Mode:** ACARS mode.
- **Lbl:** Message Label.
- **Blc:** Block ID.
- **No:** Message No.
- **Message Explanation:** Returned from the Message Label value explains the contents of the received message.

At the bottom you will find three labels with the Message explanation, Ground Station and Message Content.

2- Aircraft List Grid:

Each line of this grid shows a different received flight.

A new line will be added automatically if a new flight is received in the Live Data Grid.

It is possible to edit this database using the database navigator in the bottom in the right bottom of the window.

For information on each database navigator button, leave the cursor over it for more than 1 second and a small hint box will appear.

It is possible to sort Aircraft List Grid fields by clicking the grid titles. If the program responds too slowly when a new flight is added or updated, click the Unsort button at the right bottom of the window.

Each line has the following information for each different flight:

- **New registration indicator:** An yellow indicator will appear if the registration is new in the All Heard Database (first time you receive this aircraft).
- **RAV:** RAV means Radio/ACARS/Visual. Each of these columns will be green if you have already heard this aircraft by Radio (HF/VHF), in ACARS or seen it. These values are returned from the All Heard Database.
- **Tracking Indicator:** A blue globe will appear if a message with position information is received for this flight. The flight will be tracked.
- **Uplink/Downlink:** an arrow pointing upwards will be drawn in this column if the message is an uplink. Not available when using some decoders.
- **Tracking Indicator:** A blue globe will appear if the message has position information. The flight will be tracked.
- **Date:** Message Counter: counts the number of messages you have received for this flight.
- **Last:** Last time you contacted this flight.
- **Regist:** Registration (tail-number) of the aircraft.
- **Type:** Aircraft type. This value is returned from AirNav's Aircraft database.
- **Comp:** Company operating the aircraft. This value is returned from AirNav's Aircraft database.
- **Flight:** Flight Number.
- **Routing:** Origin and Destination airports of this flight. This data can be retrieved by the Flight Number Database or directly from the ACARS message.
- **All Heard:** Last date you heard this aircraft. Value returned from the All Heard Database

- **First:** First time you heard this flight (today).

In the bottom you will find three labels with the complete name of the company, flight number, routing with airport names (not ICAO or IATA codes) and a complete summary of all messages received for this flight.

3- Satus Bar:

This bar has the following information, from left to right:

- Active connections indicator. Will blink if there is any active connection. Leave the cursor for more than 1 second over the indicator and see in detail what connections are currently active.
- Message and Flight indicator: displays the current and total messages or flights being displayed.
- The last field of the Status Bar will have a progress bar when you are importing messages from files.

4- Menu:

In the 'ACARS Realtime Interface' window menu you will find the most important features.

General Menu:

Live Data Grid

Clear Grid: Deletes all records of the grid.

Aircraft List Grid

Export Grid to TXT: Exports all grid rows to a text file.

Export Flight Summary to TXT: Exports the Flight Summary of the currently selected flight to a text file.

Add to All Heard Management Now: Adds all flight to the All Heard Management Database.

Clear Grid: Deletes all records of the grid.

Clear Grids: Deletes all records of the Live Data and Aircraft List grids.

Options

Track Flights with Waypoint Information: if checked tracks flights that give waypoint information.

Add Uplinks to Aircraft List Grid: if checked adds uplinks (containing only aircraft registration) to the Aircraft List Grid.

Rebuild Databases: Use this option if you are getting unexpected errors in Live Data or Aircraft List Grids.

Exit: closes the 'ACARS Realtime Interface' window.

Source Data Menu:

This is the most important menu.

Here you will specify which ACARS decoder you will use and what type of connection (DDE or FWD).

Airmaster 2000

Using DDE: opens the DDE link to Airmaster.

Using FWD: you must specify the currently active Airmaster log file.

Airmaster 3.x: click and select what is the currently log file being written by Airmaster 3.x

Persivell SkySpy:

Using DDE: opens the DDE link to SkySpy.

Kracars: click and select the log file being written by Kracars

Wacars: click and select the log file being written by Wacars

ARD-2: click and select the log file being written by ARD-2

Other Decoder: click and select the log file being written by any other ACARS decoder that generates Airmaster compatible log files.

Import from File in Disk: Imports data from an ACARS log file directly into Live Data Grid. Useful to review saved files.

Show Active Connections: will show what connections are currently opened.

Clear Grid: Deletes all records of the grid.

View Menu:

Used to quickly access some features that may be useful for the ACARS listener.

Help Menu:

To access AirNav's Help menu ACARS topic.

Don't forget to also read [Tutorial 2](#) which explains for the beginner how to work with AirNav's ACARS Interface.

AirNav and HF/VHF

AirNav is the most useful application for the HF/VHF air communications listener.

AirNav first version was developed to be used by HF/VHF listeners so its background is based on this type of air communications listening.

You can type what you have listened to in an easy to understand syntax and monitor and track the flights in one or more maps on your computer screen.

Using [Terminal Mode](#) and [Flight Management Mode](#) you will be able to edit and see flight information like real life ATC controllers.

You are able to create maps for any part of the world as well as draw many overlays, such as ATC boundaries or VORs/NDBs/FIXs.

To start learning in detail how to use AirNav for HF/VHF listening go to [Tutorial 3 - North Atlantic](#).

Then you can read and play [Tutorial 4 - Africa](#), [Tutorial 5 - South Atlantic](#) and [Tutorial 6 - South America](#) which fully explains how to add flight data manually into the program, create maps, etc. Almost all program features are explained in detail in the Tutorials.

All Heard Management

With this feature you can maintain a list of all aircraft used in AirNav, their registrations, first and last heard date.

It works like a personal aviation log and is very useful for people wanting to maintain an accurate database of contacted flights.

New data can be entered into All Heard Management in many ways:

Automatically:

When you enter an aircraft Selcal or Registration using Flight Management or Terminal mode.

When you clear Aircraft List Grid of ACARS Realtime Interface (you will be asked if you want to add received registrations to All Heard Management).

When you click in ACARS Realtime Interface [General|Aircraft List Grid|Add to All Heard Management Now].

Manually:

Using All Heard Management Import/Export feature (you can add data manually or import from ACARS log files or DACARS All Heard Database).

Entering data directly into the All Heard Management Grid (not recommended).

All Heard Management window is divided in 2 parts: the aircraft list grid and the notebook.

At the top of the grid you can find the menu.

Aircraft List grid:

In this grid will be displayed all aircraft in the All heard database.

It's highly recommended not to add flight data by directly entering it into the grid; to do this, use the Add feature provided in the Import/Export tab of the Notebook.

The grid has the following fields:

Regist: Registration of the aircraft.

Comp: Company.

Type: Aircraft Type.

RAV: R, A or V will be green if you have contacted the aircraft in the Radio, ACARS or Visual (seen it).

Selcal: Selcal of the aircraft.

First Date: First contacted date.

Last Date: Date of the last contact

Comment: Any comment you wish to add.

Notebook:

In the notebook you will find the most important features concerning the All Heard Management.

The notebook is divided into 4 pages:

1- Flight Details

Will show the last 100 contact details for the currently active record in the grid.

It is possible to edit flight details data, but be sure you know what you are doing as you may corrupt the entire database.

Edit Instructions:

Data format is the following:

Flight Number, date (yyyymmdd), R or A or V;

Example: 'BAW501,19990315,A;' means the active aircraft has been contacted using flight number BAW501, at 1999/03/15, using ACARS.

If you, for example, do not know the date, leave it as ': 'BAW501,,A;'
There should always be 2 ',' and a ';' in the end of each data string.

2- General

Search:

Allows you to search for records in the database.

The first field is the value to be searched for; the second is the search condition:

By: the record must be exactly like the search field value;

In. like a wildcard search, the search field value must be in the record found (e.g.: 'NEW' + 'in' - 'NEW YORK', 'NEWCASTLE', 'STONEWALL')

The third field is the name of the database column you want to search.

Sort:

It is possible to sort the database by any of the fields that are in the drop-down box.

When the database is sorted, it is not possible to add data to it.

To disable sorting select sort to "none" and click "Show All records".

Sort:

This will display statistics related to All Heard Management.

To show flight data click Utilities menu, 'Show Only Heard Aircraft' or 'Show All Aircraft in Aircraft Database'.

3- Import/Export

Use this feature to add any aircraft you listened to when you were not using AirNav.

It's highly recommended to add aircraft using this feature and not by inserting them directly into the grid.

It is also possible to import data from DACARS All Heard Database or from ACARS log files.

You can also export grid data to a text file.

4- Notes

Aircraft without SELCAL

Menu:

Utilities

All Heard Database:

Clear All Records: Completely deletes all records from the All Heard Database. Prompts you first to confirm deleting. All data in the database will be lost.

Update Records: updates All Heard Database with flight information retrieved from the Aircraft Database. Useful when a new Aircraft Database has been released.

Export Flight Details to TXT: writes in an external text file (that you specify after clicking) the details of the currently active record of the All Heard Database.

Show Only Heard Aircraft: Displays in the grid only aircraft that you have already contacted.

Show All Aircraft in Aircraft Database: displays all aircraft in grid. Those which you have contacted will also be shown with contact details.

Refresh Grid: Click if updated data is not being displayed.

Exit: Closes the window.

View

Enables you show or hide the Notebook of All Heard Management, Aircraft Database window and ACARS Realtime Interface.

Help

Opens AirNav's Help in this help topic.

Other AirNav Features

Terminal Mode

This is the main user interface of AirNav. It's one of the ways of entering flight data.

Data can also be automatically inserted using the ACARS Realtime Interface or the Internet Interface

Edit boxes:

There are 2 green edit boxes where you can type flight information.

To entered typed info into memory click the buttons on the right of the edit boxes (with the triangles).

Information panel:

Area used to give information about what is passing in the program.

From the left to right:

Small grey label used to give info on the coordinates of the map where the mouse is or, in Vertical tracking, the flight level. Coordinates will not be shown for Azimuth maps.

Red/green label: red, tracking mode is stopped; green, tracking mode is activated.

Information label: where latest info is given (about data insertions, errors, etc).

Current time and date being used by the (hhmm yyymmdd).

Entering data via Terminal Mode

This is one of the most important topics in AirNav Help.

As you know with AirNav you can insert flight data via Terminal Mode: this means that you can enter flight data via instructions/commands that the program will interpret and store in memory or give an error message if this the case.

Now you will understand how to give that instructions to the program.

All the instructions must be typed in one of the green edit boxes at the bottom of the screen.

All the instructions have the following format:

-Callsign of the flight;

-Contents;

Note that the contents order is arbitrary (but Callsign always first).

Callsign information:

The Callsign is made of up to 10 characters (the first three represent the codification of the airline/company: this will be used to decode the aircraft registration and type when you enter selcal data). (e.g.: TWA845, BAW178, etc).

It's recommended to enter the company code using ICAO (three letter) configuration in order for the program to search the callsign database and return the origin and destination flight airports.

If you type it in IATA code (two letters) the airports will not be returned because the callsign database has only info for ICAO codes.

AirNav does not distinguish between BAW178 or BAW0178 so it's the same to type any of these callsigns.

Contents Section:

The contents section can have information about position/time, SELCAL, registration, aircraft type, mach number, flight Level, etc.

Position/Time information:

Type the position name you are referring to and a / then type the time for that position: if you don't know the time for that position type only the position name and a / (not only the position name).

(ex "LIS/2312" or "LIS").

Note: if there is more than one position with the same name of the position you are referring to and you want to quickly specify it you can type the position name and it's comment separated by a ',' (e.g.: LIS,LISBOA)

Flight Level:

To enter Flight Level information type a F then the flight level you are referring to. (e.g.: F330 or F390).

Mach Number:

To enter Mach Number information: type a M and then the Mach Number (e.g.: M082 or M084).

Selcal:

To enter SELCAL information: type a S followed by the SELCAL code (e.g.: SABCM or SKIJH).

Registration:

To enter Registration information: type a R and then the aircraft registration (e.g.: RG-BNWL or RN158TW).

Fuel:

To enter Fuel information: type a U and then the fuel data (e.g.: U70.8 U110.3).

Aircraft Type:

To enter Aircraft Type information: type a T and then the aircraft type (e.g.: TB74B or TA340).

Company:

To enter company information: type a C followed by the aircraft company. If the company name has spaces enter company name using Flight Management Mode (e.g.: CLufthansa, CQantas).

Airports:

To enter Airports information: type a A followed by airport codes separated by ‘,‘ (e.g.: AEGLL-KJFK).

Frequency:

To enter frequency the aircraft is using: type a Q and then the frequency in kHz (ex: Q8903 or Q4675).

Weather:

When entering weather data be sure you specified a flight level for the flight and a waypoint/time for the given weather.

Usually the flight level is already in memory and the waypoint/time is given in the currently insertion via Terminal mode.

-Weather is made of:

W-temperature.wind_direction.wind_speed or

Wwind_direction.wind_speed.-temperature

(e.g.: “Temperature minus 55 wind 330, 08 knots”: W-55.330.08

“295, 15 knots, temperature -48”: W295.15.-48)

It’s also possible to enter mid weather data.

To do that just append to the weather string another string containing mid weather waypoint, temperature, wind direction and speed.

(e.g.: “Temperature minus 55, wind 330, 08 knots, mid weather at 3830 North 40 West minus 52 295 diagonal 17”: W-55.330.08*3830N40W.-52.295.17)

If you also want to specify turbulence data add a ‘.T’ and the turbulence scale to the weather string:

Turbulence scale: 0-no turbulence, 1-light, 2-moderate, 3 -severe.

(e.g.: “Minus 52 330 08 knots, light turbulence”: W-52.330.08.T1)”

In Resume:

- CALLSIGN (up to 9 characters)
- Position (up to 10 characters) / Time (4 digits)
- F + Flight Level
- S + SELCAL
- R + Registration
- T + Aircraft Type

- A+Airports
- C+Company
- Q+Frequency
- M + Mach number
- U+Fuel
- W+Weather

Flight Management Mode

This is one way you have to enter flight data into memory to be processed by the program (you can also do this using [Terminal mode](#)).

Data can also be automatically inserted using the [ACARS Realtime Interface](#) or the [Internet Interface](#)

Edit boxes available:

Callsign - Where you write the callsign of the flight (ex: KLM717).

Slot - Identification of the slot in use.

Routing - Origin and Destination Airports of the flight.

F. Level - Where you write the flight level of the flight (ex: 310).

Mach - Where you write the mach number of the flight (ex: 082).

Type - Where you enter the aircraft type (ex: MD11, B74B).

SELCAL - Where you write the SELCAL of the aircraft (ex: AGFQ).

Registration - Where you enter the Registration of the aircraft (ex:HB-IWL).

Grid - Where you enter the flight data to process the position calculation: it's organized in 4 read-write and 7 read-only columns:

Waypoint: where you write the route/positions, which the aircraft will check. Way points can be geographical coordinates or the Name of the positions in the database (which you can access via Database Explorer). (e.g.: if you want to add the waypoint Lisbon, type LIS; if the waypoints is 38 degrees North, 40 degrees West, type 38N40W).

Time: the time when the flight checks the position on the left column.

Date: the date of the referring time in yyymmdd format (this will be automatically calculates when you leave this field blank).

Fuel: the fuel reported by the aircraft referring to the waypoint.

Comment: where the program puts information about the position (only after you check SAVE button or after Entering data via Terminal Mode). For NDB and VOR comment is the name their name and for geographic coordinates is 'COORDINATES'.

FAC: means is the facility type of the waypoint (NDB, VOR, FIX or GCD).

Latitude and Longitude of the waypoint.

Dst: distance between present and last waypoint.

Hdg: Heading between last and present waypoint.

GS: Ground speed of the flight between last and present waypoint.

Menu Commands:

- **Save**: saves current slot data.

- **Edit**:

Clear Slot - Deletes the slot so it could be used by another flight.

Delete old waypoints: deletes waypoints the aircraft has passed.

Insert Waypoint: inserts a new waypoint (you must set focus to a table row for the program to know where to insert a new waypoint).

Delete Waypoint: deletes a waypoint (you must set focus to a table row for the program to know where to delete the waypoint).

Estimate Times - Estimates the time for next positions. (Waypoint defined but time not defined).

Estimate Times with given Ground Speed- Estimates the time for next positions. (Waypoint defined but time not defined).

Estimate waypoints- Estimates the time for next positions. (based on pre-defines routes).

Estimate times and waypoints -Estimates next route waypoints and next times for them.

- Draw: draws flight route with or without comment in all opened maps.
- Help: opens this help topic.

Close: closes flight management mode window.

Map Drawing

Routes:

Flight:

Draws a flight route with or without its comment (as specified)

It's possible to specify the color to draw the route using Edit|preferences.

Pre-Defined:

Draws a pre-defined route with or without its comment (as specified)

It's possible to specify the color to draw the route using Edit|preferences.

Weather:

Draws all weather data existing in the weather database. There are some options that can be specified in Edit|Preferences. You can access weather database using Utilities|Database Explorer|Weather.

ATC:

Boundaries:

Draws all FIR (Flight International Region) boundaries on the map.

It's possible to add more center boundaries using Utilities|User Defined Map.

It's possible to specify the color to be used using Edit|Preferences.

Centers:

Draws all ATC center labels and their range circles (if specified).

It's possible to add more centers using Utilities|User Defined Map.

It's possible to specify the color to be used using Edit|Preferences.

General:

Positions:

Draws all positions existing in the waypoint database or only VORs, NDBs or FIXs.
It's possible to specify the color and font to be used using Edit|Preferences.

Geographic Coordinates:

Draws Geographic Coordinates on the currently active map with the specified coordinate spacing.

Digitized Map:

Draws the 160000 position provided digitized map on the current active map.
To improve the drawing time you select areas to be used.
It's possible to specify the colors to be used using Edit|Preferences.

Map Labels:

Draws all map labels (not ATC related) specified in Utilities|User Defined Map.
It's possible to specify the color to be used using Edit|Preferences.

Annotation:

Draws an annotation on a map.
After clicking draw annotation click (with the mouse) on the area of the screen you want to add an annotation.
It's possible to specify the color to be used using Edit|Preferences.

Edit:

Fill Map:

Erases current map and fills it with background color.
The color used to fill the map can be specified Edit|Preferences menu. Its name is Background color.

Use Image Editor:

Opens the image editor program (specified in Edit|Preferences) with the current map image file.

Reload from File:

Reloads current map image file from the disk.

Vertical Tacking

Vertical tracking feature enables the user to see traffic organized by altitudes in each air corridor.

To create a new vertical tracking window, go to Vtrk menu, followed by **New/Format Vertical Tracking**.
Using this form you can specify the parameters to be used in a Vertical Tracking Window.

Altitude Range:

Here you can set the lower and higher altitude ranges (only aircraft with flight levels between these values can be vertically tracked).

Zoom:

It's highly recommended to use the default values by clicking default button.

Horizontal zoom defines the relation between horizontal distance in NM and screen in pixels.

Vertical zoom defines the relation between altitudes in FL and screen in pixels.

Route Waypoints:

The large list box will have the waypoints that will define the route to be used. You can add, insert, change, delete and invert order of waypoints using the buttons at the bottom of the form.

It's possible to insert waypoints using their coordinates, name (to search in the waypoint database) and also import them from a pre-defined route.

Route Name cannot be blank and will define a title for the Vertical Tracking Window.

Avoiding Label Overlap

Within AirNav you can avoid aircraft labels to be overlapped.

It possible to do this automatically or manually.

Automatically:

Click Track menu, Avoid Label Overlap or F9.

All calculations, label rotation and resizing will be made in order to find the best way each label should be displayed.

Manually:

To do this manually you must resize and change direction of an aircraft label:

- 1- Move the mouse cursor to an area over the label you want to resize.
- 2- Maintain Shift Key down and at the same time move the mouse. The label must be brought to were the mouse cursor is.
- 3- Release the Shift key. The label will remain with its current direction and size.

Entering Position with Geo. Coord.**Entering Positions as Geographic Coordinates**

Within AirNav it's possible to entering positions as geographic coordinates.

AirNav uses the following system:

A position using geographic coordinates must always have the latitude value plus 'N' or 'S' followed by the longitude value with 'E' or 'W' after.

Following is the relation of characters and what the program interprets:

Latitude: (AirNav notation - Jeppesen notation)

38125N (5 characters) - N38 12.5
3852N (4 characters) - N38 52.0
354S (3 characters) - S03 54.0
30S (2 characters) - S30 00.0
3N (1 character) - N03 00.0

Longitude: (AirNav notation - Jeppesen notation)

172225W (6 characters) - W172 22.5
17212W (5 characters) - W172 12.0
1842W (4 characters) - W018 42.0
124E (3 characters) - E124 00.0
17W (2 characters) - W017 00.0
7E (1 character) - E007 00.0

Shortcut keys

Use of AirNav use is made easier by shortcut keys.

F1 - Opens help file in the appropriate topic.
F2 - Show/Hide ACARS Realtime Interface Window.
F3 - Start download updated data from the Internet.
F4 - Show/Hide All Heard Management Window.
F5 - Show/Hide Terminal Mode Toolbar.
F6 - Show/Hide Flight Management Mode Window.
F7 - Show/Hide Electronic Flight Progress Strips Window.
F8 - Show/Hide Terminal Mode Entries.
F9 - Automatically avoids Label Overlap.
F11 - Recalculate all flight positions instantaneously.
F12 - Start/Stop tracking.

CTRL+S - Save current log file.

CTRL+F - Open Frequency Information Window.

CTRL+W - Draw Weather data on the currently active map window.

CTRL+D - Draw route (without comment) of highlighted aircraft

Shortcuts valid for the Terminal Mode Edit boxes:

ALT + [up, down, left or right cursor] - Scrolls the active Window up, down, left or right, small increment.

CTRL + [up, down, left or right cursor] - Scrolls the active Window up, down, left or right, medium increment.

Windows Clipboard shortcuts (for the Terminal Mode Edit boxes):

CTRL+X - Cut

CTRL+C - Copy

CTRL+V - Paste

5 AirNav Menus

File

AirNav Log Files have the .anl extension and contain slot data. Each slot is identified by a number (from 1 to the selected number of slots). Each flight number has its unique slot. It is impossible to have the same flight number in 2 different slots.

Maximum number of slots is 2000.

ICAO and IATA flight numbers are interpreted as the same: for example, 'BA0501' is the same as 'BAW0501' and the as 'BA501'.

Version 2.xx log files are not compatible with Version 3.x log files.

Each slot stores the following flight data:

- Callsign (up to 10 letters or digits)
- Flight Level (3 digits)
- Mach Number (3 digits)
- SELCAL Code (four letters)
- Registration (up to 7 letters, digits or '-')
- Aircraft Type (ex B747, A340)
- Frequency (in kHz)
- Routing (airports in ICAO or IATA codes separated by '-')
- Company (company name)
- Waypoint (name, time and date, comment)
- Fuel (last known fuel for the flight)

New Log:

Creates a completely new Log file.

You must specify the total number of slots and of waypoints/slot.

Open Log:

Reads a Log file saved in a file and loads it into memory.

Save Log:

Saves the current Log file to disk using the current Log File path.

Save Log As:

Saves a log file in a specified file. By default the file name is in the format YYMMDDMM.anl which means year-month-day-minute when the file was created.

Export to TXT:

Use this feature to export current opened log file data to a text file.

- **Simple Log:**

Generates a file that contains your terminal mode successful entries and their time and frequency.

- **Detailed Log:**

Generates a file with detailed data for each slot.

Exit:

Closes AirNav

Edit

This feature allows you to use MS Windows clipboard within AirNav.

Also it's possible to set program preferences.

Clear:

Clears active Terminal Mode Edit box contents.

Cut:

Copies to Clipboard and Deletes active Terminal Mode Edit box contents.

Copy:

Copies to Clipboard active Terminal Mode Edit box contents.

Paste:

Copies to active Terminal Mode Edit box Clipboard contents.

Delete:

Deletes active Terminal Mode Edit box contents.

Select All:

Selects All active Terminal Mode Edit box contents.

Preferences:

Sets program preferences.

Display options:

Select the data you want to be displayed in the aircraft label.

Maps

AirNav Map Files have the .map extension and contain data used in the referring .bmp image files. The map picture is saved into a file that has the same name as map file but a different extension (.bmp).

New Map:

Creates a new map file and loads it in a new window.

You have six ways of creating a new Map File:

- 1) Tabular Map Creates a new Map using map top, bottom, left and right coordinates.
- 2) Centered Map Creates a new Map using map center coordinates and zoom. This allows the creation of azimuth (polar) maps.
- 3) OnScreen Map Creates a new Map using the mouse and a virtual box on the screen.
- 4) Import Map Creates an AirNav .map file using an image from an existing .bmp file.
- 5) New World Map Creates a new Map that fits your screen.
- 6) Preset Map Creates a new Map based on data stored in the program memory.

Open Map:

Reads a Map file saved in a file and loads it in a new window.

Save Map:

Saves the current Map file to disk using the current Map File path.

Save Map As:

Saves a map file in a specified file.

Close Map:

Closes current opened map window.

Open World Map:

Loads the world.map file into a new window (the file containing the picture is world.bmp).

If this file doesn't exist the program prompts you to create a new world map.

Draw Map:

Draws map related issues into the current active map window.

Go to Draw for more information.

Vtrk

New Vtrk:

Creates a new Vtrk file and loads it a new window.

Open Vtrk:

Reads a Vtrk file saved in a file and loads it a new window.

Save Vtrk:

Saves the current Vtrk file to disk using the current Vtrk File path.

Save Vtrk As:

Saves a Vtrk file in a specified file.

Close Vtrk:

Closes the currently active Vtrk window.

Format Vertical Tracking:

Formats the currently active Vtrk window.

Draw:

Draws vertical (altitudes) or horizontal (positions) lines in the currently active Vertical Tracking Window.

Colors to be used can specified using Edit|Preferences.

Track

This Menu is specially dedicated to program tracking features and operations on Slots.

Show/Hide:

Shows or hides several AirNav windows.

Delete Slots:

Erases flight data from the selected slots.

You can specify slots to be deleted choosing their slot number.

It is also possible to delete slots which waypoint data is older than 5 hours.

Expand/Reduce number of Slots and Waypoints:

This form is used to improve AirNav performance.

You can specify the total number of slots the log file has and also the number of waypoints/slot.

It's recommended to use the adequate number of slots and waypoints/slot: calculations will be made quickly and log files will be smaller saving memory and disk space.

View Standby Flights:

Select which Standby flights should be shown.

Example: if you check 'For the last 1 hour' only flights with waypoint data not older than 1 hour will be shown.

Estimate:

You can use AirNav estimation routines to estimate next waypoint and the times over them.

ALL Times: Estimates next waypoint times for all slots based on flight previous ground speed.

ALL Times with Given Ground Speed: Estimates next waypoint times for all slots based on a given ground speed.

ALL Waypoints: Estimates next waypoints for all slots.

Estimate (All Times and Waypoints): Estimates next en-route waypoints and their times. This operation is made for all slots.

Recalculate all flight positions:

Instantaneously calculates all flight present positions.

Avoid Label Overlap:

Automatically rotates and resizes aircraft labels in order to avoid them to be overlapped.

This is a very complex routine and sometimes takes a few seconds to execute.

Active Frequency:

Sets Program Active Frequency.

Start/Stop Tracking:

Starts or stops program tracking.

Utilities

In this menu you can access the most important AirNav features.

You can find here the ACARS and Internet interface.

ACARS Realtime Interface:

AirNav ACARS Interface has all the utilities you need to retrieve data from ACARS decoding programs.

Internet:

Downloads updated flight data from the Internet.

All Heard Management:

Maintains a database of all aircraft listened when using AirNav.

Database Explorer:

Enables the user to add, delete, edit and make more changes to all AirNav databases.
It's also possible to search for records in the databases.

User Defined Map:

Enables the user to add more data to the digitized map.
It's possible to add more boundary lines, lakes, rivers...and also more map labels.

Program Statistics:

Shows AirNav statistics.

Frequency Information:

Contains information on frequencies that could be useful when listening to ATC centers.
Organized by Area/Center.

Distance and Bearing:

The purpose of this feature is to calculate the distance (in NM or Km) and bearing from an origin to a destination location.

Set System Time and Date:

Used to easily set PC system clock and to switch between using real or simulated time.

Window

Record Desktop:

Saves your current desktop configuration to disk in order to be restored later.
Desktop configuration means all opened map and vertical tracking windows and Terminal Mode and ACARS Quick View panels.

Restore Desktop:

Restores your saved desktop configuration.
It is possible to put the application restoring your desktop configuration every time it starts. To do that go to the Edit menu, Preferences, General [Edit|Preferences|General].

Tile Horizontally/Vertically:

Puts all the open windows tiled horizontally/vertically (map or vertical tracking windows).

Cascade:

Rearranges all opened windows (map and vertical tracking) in AirNav so they overlap.

Arrange Icons:

Arranges the icons of minimized forms so that they are evenly spaced and don't overlap.

Close All:

Closes all map and Vertical Tracking opened windows.

Help

Contents:

Puts all the open windows tiled horizontally/vertically (map or vertical tracking windows).

Topic Search:

Rearranges all opened windows (map and vertical tracking) in AirNav so they overlap.

Tutorial:

Opens Tutorial selection form.

Tips:

Opens the AirNav Tips Window.

It is suggested to read all tips since they are full of useful suggestions.

How to Register:

Shows information on how to register the program

Register:

Opens Registration window where a user can disable Demo mode after registering.

AirNav Online:

Opens AirNav Web pages using your Internet Browser.

About:

Opens the program about box with author information.

6 Troubleshooting

For additional support email to support@airnavsystems.com

I get the error message “BLOB has been modified”. What does this mean?

When you shut-down your computer without closing AirNav first, there is a 10% possibility of the ACARS databases be corrupted.

To correct this problem, open the ACARS Interface Window [Utilities menu|ACARS Realtime Interface] and on the General menu, click options followed by Rebuild Databases.

Is there any way of re-indexing databases?

Yes and it is suggested that you do this frequently. To re-index all AirNav databases go to Utilities menu, Database Explorer and click 'Re-Index All Databases'.

When AirNav is starting I get the following error: “An error occurred while attempting to initialize the Borland Database Engine (error \$2109)”. What does it mean?

This error happens because Borland Database Engine was not correctly installed within AirNav setup. To correct, run bde.exe file contained in AirNav installation files (on CD-ROM or on the downloadable zip).

When trying to enter a new record into a database I get the Key violation error. Why?

Key violations occur when appending records to a table that has a primary key. On a table with a primary key, no two records may have the same values on all of the key fields. If a record that is being appended has the same values on all the key fields as a record in the destination table, it cannot be appended.

This is the list of AirNav tables using primary keys and the fields with the primary key activated:

Waypoint Table:

'NAME,COMMENT,FACTYPE,LATITUDE,LONGITUDE'

Aircraft Table: 'SELCAL,REGIST,AIRCRAFT,COMPANY'

Airline Table: 'AIRLINE,THREECODE,TWOCODE,CALLSIGN'

Flight Number: 'CALLSIGN'

All Heard Management: 'FIRSTDATE,LASTDATE,REGIST's

I'm trying to insert new records but I'm having problems. What to do?

Here you will find a sample on how to insert a new record into Waypoint database.

The new waypoint will be called BIXBY.

1-Click on the name box (not in the grid).

2-Click '+' button.

3-Enter all BIXBY parameters...name, comment, fix, latitude and longitude.

4-Click 'V' button.

The record is now correctly inserted.

To delete a record simply highlight it on the grid and click the '-' button.

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Technical Support

Technical Support and Bug Reports

In the event that you wish to contact AirNav Systems for support or bug reports, we have provided a list of contact methods for which you may do so.

Support Email *support@airnavsystems.com*

As a convenience, we have also set up an Email list server, which will automatically notify you in the case of new developments and software updates. To subscribe to this list, simply send an Email to

aml@airnavsystems.com

With the words subscribe AirNav Mailing List. You may also remove yourself from the list by emailing the same address with the word unsubscribe followed by your email in the body of the message.

8

Online Resources

AirNav is available on the Internet at:

WWW Homepage: <http://www.airnavsystems.com>

E-mail: info@airnavsystems.com

AirNav WWW homepage contains information on program upgrades as well as downloadable updated program data files.

The author can be contacted by e-mail (above) or at the following address:

Andre Brandao
Rua Agostinho Neto, Lote 11, 2 C
Quinta do Lambert
1750 LISBON
PORTUGAL

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Registration Information

You have five ways to register AirNav:

- 1- Online Order (you will receive AirNav within 3 just hours!)
- 2- Postal, Telephoned and Faxed Orders
- 3- Order from a shop
- 4- Order directly from the author
- 5- If you are a V2.10 registered user

1- Online Order (you will receive AirNav within just 3 hours!)

The quickest and most used way to register AirNav is to register online with RegSoft.

Have your credit card ready.

AirNav's registration via RegSoft is \$70.00 USD.

If you want to receive AirNav in CD-ROM please add \$15 USD for package and post expenses.

The downloadable file has exactly what you will find on the CD-ROM.

Go to the following URL to register AirNav Online:

<http://www.airnavsystems.com>

2- Postal, Telephoned and Faxed Orders

If you don't want to send your credit card number over the Internet, or you want to pay by a check made out in US Dollars, then you can send your registration to RegSoft by postal mail or fax, or you can register over the phone.

AirNav's registration via RegSoft is \$70.00 USD.

If you want to receive AirNav in CD-ROM please add \$15 USD for package and post expenses.

The downloadable file has exactly what you will find on the CD-ROM.

Make checks payable to RegSoft.com.

By telephone ask to order AirNav - The Aircraft Tracking Software for Windows.

RegSoft's contact details are:

Address:

RegSoft.com
6595-G Roswell Road
Suite 732
Atlanta, GA 30328
USA

Tel: 1-877-REGSOFT (Toll-free)
770-497-9126 (for international orders)

FAX: 770-497-9234 (both for US and international orders)

Email: info@regsoft.com

3- Order from a shop

AirNav will be available in some aviation enthusiast shops.

For a list of shops where the program is currently available visit www.airnavsystems.com

4- Order directly from the author

It's also possible to order directly from the author.

AirNav's registration via the author is \$85.00 USD.

This price includes the CD-ROM and all possible postal charges.

You can also pay in your own currency.

Checks or money are accepted.

Make checks payable to 'Andre Brandao'.

Just send to the author the following information:

- 85 USD or the same in your own country currency in money or cheque.
- This price includes the CD-ROM and all postal charges.
- AirNav's price in other currencies is:

80 Euros - Europe

50 GBP - Great Britain Pound

170 NLG - Netherlands Guilders

150 DEM - Deutsche Mark

500 FRF - Franc Francais

3000 BEF - Franc Belge

130 CAD - Canadian Dollar

130 AUD - Australian Dollar

- First and last name
- The way you want to receive AirNav (registration ID via e-mail or CD-ROM via airmail).
- Your e-mail or the address you want AirNav CD-ROM to be delivered to.

Author's address is the following:

Andre Brandao

Rua Agostinho Neto, Lote 11, 2 C

Quinta do Lambert

1750 Lisbon
Portugal - Europe

When your payment is received AirNav will be sent via airmail.

5- If you are a V2.10 registered user

AirNav 2.10 registered users will receive a discount when ordering AirNav 3.0.

AirNav 3.0 will be 50USD for AirNav 2.10 registered users.

If you want to receive AirNav on CD-ROM please add \$15 USD for package and post expenses.

The downloadable file has exactly what you will find on the CD-ROM.

You can register for this discount price in two ways:

1-Online at www.airnavsystems.com for V2.10 registered users

Go to www.airnavsystems.com and click Online Registration.

Then follow the ordering instructions for registered users.

You will be asked for your V2.10 registration codes.

2-Order via the author for V2.10 registered users

You can also register via the author by sending 50USD in money or cheque to the address specified in the 'Order via the author topic' above.

If you want to receive AirNav in CD-ROM please add \$15 USD for package and post expenses.

In any case if you are a V2.10 registered user, you will receive detailed information about AirNav 3.0 ordering.