Data Tools Wizard

User's Guide

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Introduction

The **FMSuite Data Tools Wizard** (called DT in the rest of this guide) is a utility program designed to download and import frequency databases for use within the Frequency Manager + Scanner (called FM in the rest of this guide). It gives you a choice of importing six internet databases, importing the default SDR# Frequency Manager's database, importing a generic file, and exporting an FM database to a generic file.

System Requirements

Basically if you can run SDR Sharp, you can use Data Tools.

- **Operating Systems:** Windows 7, Windows 8.x, and Windows 10. The binaries are compiled for a 32-bit environment for the broadest compatibility but run equally well in an x64 environment.
- **Processor:** 1-gigahertz processor or faster; **2 or more cores is recommended**. Hyper-threading/Multi-threading should be enabled for the best performance. **NOTE:** SDR# and my plugins and applications are multi-threaded, which means they perform multiple tasks simultaneously. As a result you may have performance problems if your processor cannot execute at least 4 threads simultaneously.
- **Memory:** 1 gigabyte or more total in the computer.
- **Hard Disk:** The software requires about 705KB.
- **.NET:** Version 4.6 runtime as required by SDR Sharp.
- **SDR Sharp:** Revision 1430 or newer.

Using Data Tools

Data Tools is a standalone program separate from SDR# and its plugins. It offers a way to download frequency databases from the internet and import them into an FM database. It also permits you to import data from a generic data file format and to export an FM database to a generic file format. Data Tools operates as a wizard; you make choices, fill in some blanks, and it takes care of the rest.

The Data Tools Wizard

Selecting a database action

Download a database from the Internet

Data Tools already knows about several popular frequency databases on the Internet and lets you download and import them into a Frequency Manager + Scanner database.
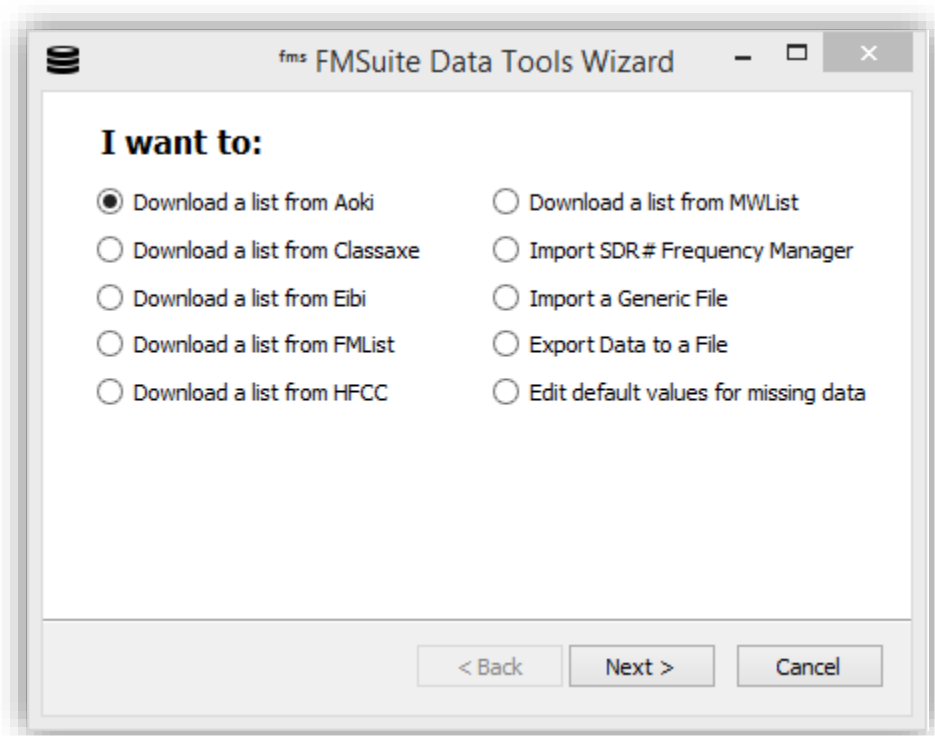
The download function has 4 steps. The amount and type of information required for a download can vary according to the desired database. To move between steps, simply click the Back and Next buttons.

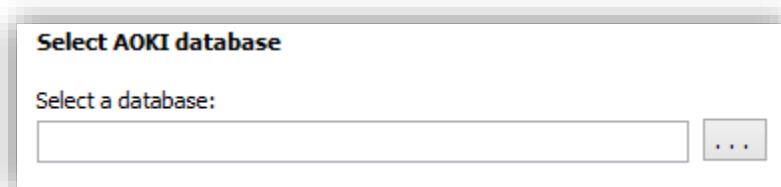1. Select an Internet database to download.

2. Select an FM database in which to store the data. If you specify a filename that doesn't exist you will be prompted for permission to create it.

However if the FM database exists, and it already contains data from the selected internet database, an additional choice is presented to you: Append new data to the existing data, or Replace the existing data with fresh data from the download.

Select AOKI database

Select a database:

[   ] [. . .]

That database contains data. I want to:

○ Append new data from AOKI to existing data

◉ Replace existing data from AOKI with a new download

3. Specify the Internet download address (the *URL*) of the database. DT comes with these addresses already supplied; however many databases change their URLs periodically, so if you type the new URL here it will be saved for the next time you wish to download the data.

Select AOKI options

URL to AOKI file:

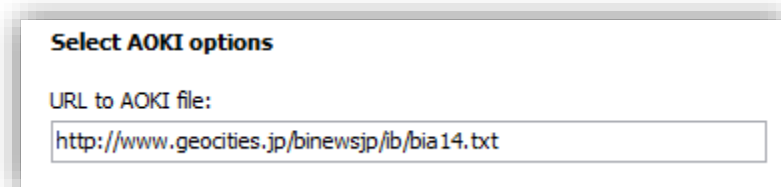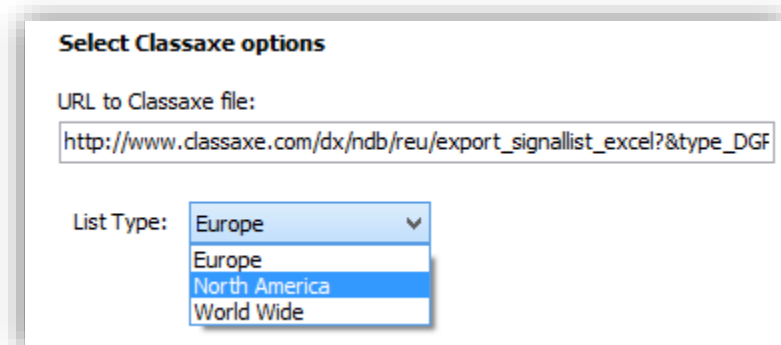http://www.geocities.jp/binewsjp/ib/bia14.txt

4. The download will start and a progress bar will display.
When the data is fully downloaded and imported the wizard's "Finished" page will display.

Some of the databases require additional information before you can download them.

1. The Classaxe download needs to know which of three databases you want to download: Europe, North America, or World Wide. The last choice combines the first two choices into one file and will take longer to download.

Select Classaxe options

URL to Classaxe file:

http://www.classaxe.com/dx/ndb/reu/export_signallist_excel?&type_DGF

List Type: [Europe   ▾]
Europe
North America
World Wide

2. The FMList download needs to know your latitude and longitude so that the database can be customized for your location. DT, by default, uses the latitude and longitude of the Royal Observatory Greenwich in the UK. If this is acceptable you can proceed with the download. However if

Select FMList options

URL to FMList file:

http://www.fmlist.org/_server.php?task=113&long=36.29&lat=-115.29

My Latitude: [36.29]   [Find my Location]
My Longitude: [-115.29]

you know your latitude and longitude you can type them into the designated fields in decimal format; but Data Tools will look up your latitude and longitude for you if you click the "Find my Location" button.

Your location is determined by one of the free Internet databases that accept an Internet IP address; your computer's IP will be passed to the database and the latitude and longitude will be retrieved.

The URL for the FMList file cannot be edited directly nor can text be pasted into the text box. You may type your latitude and longitude into the respective text boxes and the URL will be updated while you type.

> ⓘ **Important Note**
> The location is approximate because these free services cannot derive the latitude and longitude down to your specific house, office, or school; instead it locates the equipment where your neighborhood connects to the internet provider. This might be 100 feet away or several miles away depending on your internet provider, but it will be close enough for the FMList database to be accurate for this purpose.

> ⓘ **Important Note**
> The ability to customize the database to your latitude and longitude is dependent on that feature being offered by the owners of the FMList database. At the time the Data Tools Wizard was developed it was a planned feature by its author and was not generally available for use.
>
> In addition, at the time this guide was written the FMList database download included only European stations. For other worldwide locations you can obtain data from http://www.fmlist.org, convert it manually to a generic file format, and import it using the DT's generic import feature.

When the FMList download progress page displays you may see the text "Download Requested. This may take a few minutes."

3. All database downloads check the download URL before requesting the download. In this manner DT tries to let you know of any issues with the URL before committing to a download.

However the MWList download may require much more time to respond to the URL request than other databases so you may see additional text on the URL wizard page that says "Validating the URL. This website may take a few minutes, so please be patient."

When the MWList download progress page displays you may see the text "Download Requested. This may take a few minutes" before the progress bar starts to increment.

Why not RadioReference.com?
In all honesty – the free time I have. Downloading from RR is possible but very involved, and I've decided to make that a future enhancement in favor of getting this version's improvements to you more quickly.

Importing a Generic File

The choice "Import a Generic File" permits you to take a delimited file from any source and import it into an FM database. There are necessarily some restrictions which are quite common with generic files, and they are described here to help you format your file properly.

Import Generic File

Select the file to be imported:

C:\My Generic File.csv   [. . .]

Delimiter:

◉ Commas
○ Semicolons
○ Tabs
○ Custom [ ]

1. Delimiters are the characters in a generic file that separate one data field from the next. DT supports 4 kinds of delimiter characters:
    o Commas
    o Semicolons
    o Tabs
    o Custom, whereby you specify the character. The most common custom character is the pipe character ("|")
2. If comma delimiters are used, text fields containing commas must be surrounded by the double-quote character ("). For example if the City of a radio station is `Las Vegas, NV` the field in the Comma-delimited generic file should look like this:

    `,"Las Vegas, NV",`

    With other data fields before and after the City. Numeric and date fields do not require surrounding double-quote characters but do require a delimiter between fields.
3. Any one frequency's data must be all in one line of content in the generic file. The end of the line must be marked with a carriage return and a line feed.
4. The fields in your generic file must be in a specific sequence and each field must be a specific data type. See the Appendix for a table that describes the field sequence and data types.
5. Most of the fields in the file are optional; if you have no data for a field you may simply leave it with no content between the field delimiters. However you must at least have content for Frequency, Center, Mode, and Filter Bandwidth.
6. You may import a list of Groups by combining them into a list of Groups separated by a caret character ("^"). For example you might have the local Police helicopters in your source data assigned to the groups "Police" and "Aero". To import these into an FM database, format as the two words separated by a caret:

    `,"Police^Aero",`

As the generic data is read from the file, each line is checked to ensure it is acceptable. Any lines that are not acceptable will be displayed in an error message containing up to 10 of such lines. Any line in which the Frequency value cannot be interpreted as a number will be skipped.

One more thing – having the first line of your file filled with the names of the fields is optional. DT doesn't require it, and will ignore it if it is found.
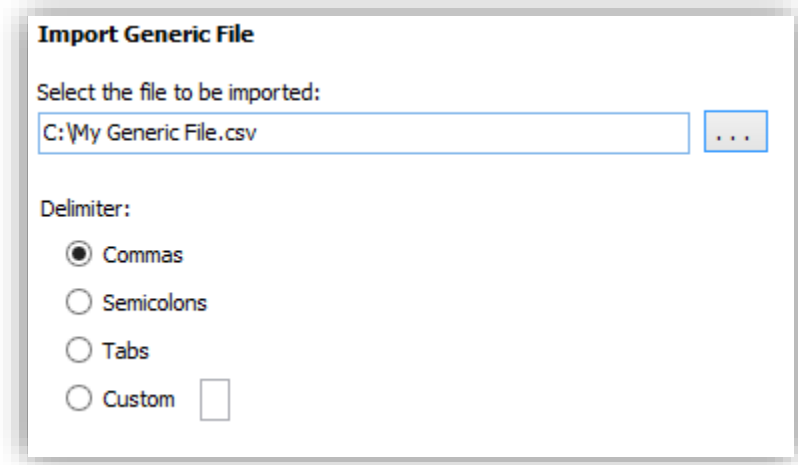
> ⓘ **Important Note**
>
> Do not use Microsoft Excel to edit CSV files. Excel will not surround text fields with double quotes, and will "helpfully" garble your data by converting large numbers like frequencies into scientific notation and by removing leading zeros from other numbers. If you must edit a CSV file try one of the several free CSV editing programs available on the Internet.

Exporting a database

When exporting an existing FM database you perform these steps:

1. Select the FM database that you wish to export.
2. In the Export Options step of the wizard, specify the file to export the data into. The other options here are:
    - o Your choice of **Delimiter**:
        - ▪ Commas
        - ▪ Semicolons
        - ▪ Tabs
        - ▪ Custom (define the custom character you wish to use)
    - o **Include Column Headings** will put the column names in the first row of the file.
    - o **Enclose text in double quotes**: this is highly recommended for the best compatibility with other software.
    - o **Remove Special Characters**: this too is highly recommended because it will remove characters from your text that might cause problems with the software that ultimately imports the file. For example double quotes inside text are converted to single quotes.
3. After clicking Next on the Export Options page your file will be created.

The export includes the Group(s) you have defined for each frequency. If you have defined more than one Group for a frequency all of the groups will be listed in the Groups column of the exported data as a single list; the Group names in the list will be separated by the caret symbol (^). For example:

```
,"Clark County Misc^Transporation^Aero",
```

The caret symbol is used instead of commas or other common punctuation in order to avoid confusing the application into which you import this exported data; if commas or other common punctuation were used, and if you did not choose **Enclose text in double quotes**, the groups would throw off the column alignment of the remaining columns on each row and your data import would not work.
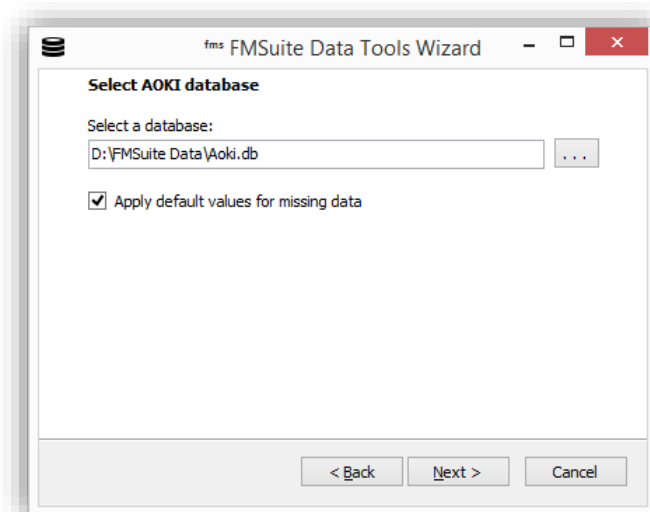
Edit default values for missing data

Sometimes a downloadable database will not contain all the data you would like. Using this option you may define default values for missing data before performing a download. When the database is downloaded, missing data from the internet will be replaced with your default values.

Select this option and then click the Next button. A window will appear which looks similar to the Edit window of the Frequency Manager + Scanner. You may enter your default values and click Save to record them. All values are optional; if a value is left blank then the corresponding value will be blank if the incoming data does not contain that value.
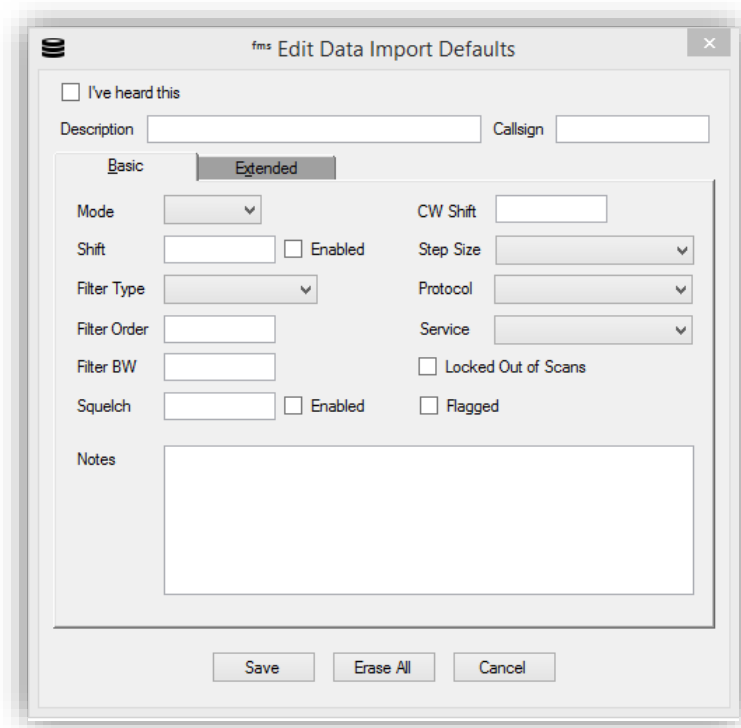
As with the Edit window, there are Basic and Extended tabs into which you may enter data. Click Save to save the data. Click Erase All to delete all default values and return them to their empty state. And click Cancel to exit out of the window without saving any changes.

After saving your defaults you are returned to the "I want to" page of the Data Tools Wizard. You may now select a database for importing. In this example we have chosed the AOKI database and have clicked the Next button.

If you put a checkmark in "Apply default values for missing data", any defaults you created earlier will be applied when the data is imported.

Appendix

Generic File Import Fields and Data Types

A generic file import must have all of these fields, even if blank or empty. Fields marked as "Required" must have values in them.

Field Nbr	Field Name	Data Type	Size	Notes
1	Frequency	Numbers	Up to 11 digits	In Hertz; zero or numbers. ==Required==.
2	Center	Numbers	Up to 11 digits	In Hertz; zero or numbers. ==Required==.
3	Call Sign	Text	Up to 20 characters	Letters and numbers
4	Description	Text	Up to 32,767 characters	Letters, numbers, punctuation
5	Protocol	Text	Up to 20 characters	Letters, numbers, punctuation
6	Service	Text	Up to 20 characters	Letters, numbers, punctuation
7	Groups	Text	Zero or more characters	Letters, numbers, punctuation; group names must be separated by a caret character ("^")
8	City	Text	Up to 50 characters	Letters, numbers, punctuation
9	Country	Text	Up to 20 characters	Letters, numbers, punctuation
10	Language	Text	Up to 20 characters	Letters, numbers, punctuation
11	Latitude	Text	Up to 20 characters	Letters, numbers, minus sign, decimal point
12	Longitude	Text	Up to 20 characters	Letters, numbers, minus sign, decimal point
13	Azimuth	Text	Up to 4 characters	Letters, numbers, minus sign, decimal point
14	Target	Text	Up to 20 characters	Letters, numbers, minus sign, decimal point
15	Days	Text	Up to 20 characters	Letters, numbers, minus sign, decimal point
16	Start Time	Text	4 digits	Typically 0000 through 2359
17	Stop Time	Text	4 digits	Typically 0000 through 2359
18	Power	Numbers	Up to 7 digits	Zero or numbers only. The scale depends on the source of the data.
19	Notes	Text	Up to 32,767 characters	Letters, numbers, punctuation
20	Flagged	Numbers	1 digit	Zero or 1
21	Locked	Numbers	1 digit	Zero or 1
22	Heard	Numbers	1 digit	Zero or 1
23	Date	Text	0 to 20 characters	Letters, numbers, punctuation. This is normally the last date the station was monitored.
24	Mode	Text	Up to 20 characters	From the options provided by SDR#. ==Required==.
25	Shift Enabled	Numbers	1 digit	Zero or 1
26	Shift	Numbers	Digits	In Hertz, in the range supported by SDR#
27	Filter Type	Text	Up to 20 characters	From the options provided by SDR#. ==Required==.
28	Filter Bandwidth	Numbers	Digits	In Hertz, in the range supported by SDR#. ==Required==.

Field Nbr	Field Name	Data Type	Size	Notes
29	Filter Order	Numbers	Digits	In the range supported by SDR#. Required.
30	Squelch Enabled	Numbers	1 digit	Zero or 1
31	Squelch	Numbers	0 to 3 digits	In the range of 0 to 100
32	CW Shift	Numbers	Digits	In Hertz, in the range supported by SDR#
33	Step Size	Numbers	Digits	In Hertz, from the list supported by SDR#. Required.
34	Source	Text	Zero or more characters	Give the source of the data a name

Troubleshooting

I wish I could say that there will never be any challenges, but in reality stuff happens. Please try the following remedies if you have these problems.

Error Messages

Problem	Potential Solution(s)
The URL could not be verified; please check it for accuracy.	Before requesting a download, DT tests the URL to make sure it is good. This message appears when that test fails. Obtain the correct URL and type it into the relevant text box; it will be saved for future use if it is correct.
The Latitude & Longitude finder website returned "404 Not Found". It is recommended that you uninstall and reinstall the Data Tools Wizard to restore the finder's URL.	The IP-to-LatLong URL was incorrect.
An error ocurred while getting the Latitude & Longitude: timed out. Try again another time.	The IP-to-LatLong website took too long to respond.
An error ocurred while getting the Latitude & Longitude: *followed by the text of the error*	An unexpected error was received when attempting to look up your Latitude and Longitude. Resolve the error and try again.
An error occurred while attempting to download the data. The error is: *followed by the text of the error*	An unexpected error was received when attempting to download the internet database. Resolve the error and try again.
An error ocurred: The downloaded file was empty.	The download was successful but the file that was downloaded had no content.
No data was downloaded. Check the URL for correctness or try again later.	The website URL was genuine but did not have a file to download.
The downloaded file was empty or could not be converted into data.	The download worked but the resulting file was empty or contained invalid or unexpected data.
Line *X* has less than *N* columns.	The generic file being imported has too few columns. This can happen because the file has too few columns overall, or because a character such as

	a carriage return has split a single line into 2 lines. Open the file in a text editor and examine line *X* to see what the problem is.
Line *X* has more than *N* columns.	The generic file being imported has too many columns. This can happen because some field had a delimiter character in it (for example a comma in a name or description) and the line was split into an additional column. Open the file in a text editor and examine line *X* to see what the problem is. You may need to remove delimiters from inside text fields, or surround text fields with double quotes, in order to get an accurate import.
Line *X* has an invalid 'Y'; line was skipped due to the error: *Z*	The generic file being imported has invalid data in line *X*, column *Y*. Error message *Z* explains the problem with the data.
Line *X* has data that cannot be interpreted in column 'Y' : 'Z'	The generic file being imported has invalid data in line *X*, column *Y*. Error message *Z* explains the problem with the data.
An error occurred while attempting to import the data. The error is: *followed by the text of the error*	This generic file import error typically occurs because the specified file is in an incompatible format.
An error occurred while attempting to import the data. Some data is in an unexpected format or data is in the wrong column. Check your file and make sure that there are no column headings,that only text is in text columns, that only numbers are in numeric columns, etc.	The generic file being imported had field formatting errors.
An error ocurred: The zip file did not contain the desired file: *followed by the name of the expected file*	Some database downloads, like HFCC, send a zip file containing one or more data files. The named file did not exist in the zip.
An error occurred while parsing the HFCC files: *followed by the text of the error*	One or more of the HFCC files could not be read accurately.
The file contains data but it is not in a compatible format. Unable to import.	Generally occurs when an SDR# Frequency Manager database (NOT the Frequency Manager + Scanner database) is not in the expected format.
The data is in an unexpected format. Unable to import.	The file to import is in an unfamiliar format.

Known Issues
None.

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