

## **The Flarm® Database Manager**

### 1. **Overview**

Flarm® collision avoidance equipment is widely used by glider pilots and many powered aircraft to indicate the presence nearby of similarly equipped aircraft. Basic versions merely indicate the height and direction of the threat, whereas many versions will display additional details based on the transmitted ID.

Advanced displays require a database of known IDs together with the following fields:

*competition number, registration letters, aircraft type, pilot name, airfield ICAO address, and the communications frequency in use.*

There are many sources of this information, and none contain a complete set of registrants, so program FLRM\_DBM is provided to merge, edit, and list these files before creating a customized version for your particular equipment.

Clearly the greatest advantage comes from combining the databases of Flarmnet and Glidernet, but the addition of local knowledge is also of considerable value.

The program is available as part of the AviaDBM package at [http://www.abnormal.com/~avia\\_dbm](http://www.abnormal.com/~avia_dbm)

### 2. **Database Types**

Flarmnet is the only source of files suitable for in-cockpit displays, so currently only aircraft registered with Flarmnet will have any information displayed with their Flarm identifier. FLRM\_DBM allows you to correct this problem.

Files are available at <http://www.flarmnet.org/index.php/en/downloads> for Butterfly, LXNAV, Naviter, FlarmView, LXNavigation, XCSoar, WinPilot, and LK8000, or compatible devices.

In reality there are only three basic types and one derived type:

#### 2.1 **Butterfly displays**

Typical file name: “flarmnet\_eu\_af\_003c59.bfn”

These files contain all the fields listed in the overview.

#### 2.2 **Naviter and compatible types**

Typical file name: “20151003.fln”

Once again capable of holding all the field types, this time in XML format, although obscured by incrementing each character code.

### 2.3 FlarmView displays

Typical filename: “flarm.flx”

Before FLRM\_DBM, the user had to download a Naviter format file and convert it using program fln2flx.exe, producing a file which holds only the Flarm ID and competition number. Items are even included for which the tail number is unknown – a particularly useless feature.

### 2.4 LXNavigation types

Typical filename: “data.fln”. (Yes, same extension as Naviter, very confusing).

Fixed length hexadecimal representation of the complete set of fields.

Flarmnet divides the users of this format into two groups, but in reality both groups yield the same download file.

### 2.5 Glidernet database

Typical filename: “glidernet.txt”

Available from the Open Glider Network at <http://ddb.glidernet.org/download> (you have to choose the filename yourself ).

Does not contain Pilot name, airfield, or frequency fields. This separate organization provides the networking for the many hundreds of ground monitoring stations, and publishes a map of all observed flarms in real-time.

Pilots are encouraged to register so that their details can be displayed on the map at <http://live.glidernet.org> At the time of writing 5735 people had registered with flarmnet, and 3740 people had registered with glidernet, of which 1931 had not registered with flarmnet

### 2.6 DB Text format

The best way to examine this format is to save the data in memory to a .txt file. You have the ability to add local information by using DB Text files, and any changes you might wish to make – such as elimination of data from other countries – should be carried out by re-inputting an edited DB Text file, however the airfield and frequency fields are not included.

### 3. Program Operation

#### 3.1 Reading

The File/Open dialog allows you to choose a file to be read and stored in internal memory. Only files with known extensions are displayed, but any filename can be entered and the format is always chosen by recognition of the format, not the extension.

Second and subsequent read operations cause the data to be merged in program memory, with the latest data taken to be correct. For this reason it is probably best to start with a Flarmnet file and finish with your local DB Text file.

#### 3.2 Listing

This is similar to the Open operation except that the data is placed on the display instead of into memory. If you would like the list to be filed, choose File/SaveFullListing.

#### 3.3 Saving Memory

By using File/SaveMemoryAs, you are dumping the contents of memory in a format suitable for your device. All formats are selectable in the "Save as Type" dropdown list, and if your chosen filename extension does not match the format chosen, the correct extension is appended.

#### 3.4 Version Numbers

Flarmnet maintain a version number system, whereby a 6 digit hex number is incremented for each data change so that later files can be recognized as such. Only bfn and fln types carry these numbers in their data, and their filenames also play a part (see examples above which are all from version 003c59).

The program's memory of version number will be set by any read operation selecting these file types, but it can also be viewed/changed immediately prior to a save operation by choosing File/SetVersionNumber. This becomes mandatory if a save is attempted to these file types without a version number in memory.

#### 3.5 Clear Memory

You can start over by choosing File/ClearMemory, although exit and restart achieves the same result.

#### 3.6 Debug

Debug mode can be set using File/Debug, or by calling the program with argument -d. When set you get a list of any model names which are changed while creating a Butterfly .bfn file. (see below).

### 3.7 Model Names

These are included in bfn and fln file types, and saved in program memory in text form. However, in Butterfly bfn files they exist only as index numbers to a firmware list. FLRM\_DBM has a copy of this list, so normally this translation is invisible, but for glidernet files, and user-created entries in DB Text files, if there is no direct match in the list, the program has to make an 'educated' guess when creating a Butterfly file.

### 3.8 File Names required by your device

It is a very good idea to stick to the file naming convention applicable to your particular equipment when uploading a new database.

### 3.9 Special DB Text Filename

The DB Text file format derives from my ground station monitor application which uses it to save harvested information. A real-time display is included which employs a single line for each observed flarm ID in the current session.

This is greatly enhanced by the addition of tail numbers, registrations, and pilot names using FLRM\_DBM, but is restricted to flarms which have actually been observed.

The filename of this database is "OGNdb.txt", and any modified version is normally saved initially as "newOGNdb.txt". Therefore, any filename ending in "OGNdb.txt" is treated differently, in that any newly saved version will contain only those flarm IDs which were present in the version which was input during the merge operation.

If you are a ground station owner you are welcome to a copy of this application which is written in the Perl language: "OGNdisp.pl".

The Doc.  
October 2015