loggertools

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1 Abstract

loggertools is a collection of free tools and libraries which talk to GPS flight loggers.

The project is aimed at users of alternative operating systems like Linux and Mac OS X, who usually receive no support from the hardware vendors.

2 Installing *loggertools*

To install *loggertools*, you need GNU make and gcc. Download the *loggertools* source tarball:

```
wget http://max.kellermann.name/download/loggertools/0.x/loggertools-0.0.1.tar.bz2
tar xjf loggertools-0.0.1.tar.bz2
cd loggertools-0.0.1
make
make install
```

The last step must be done as *root*.

3 Tools for Filser / LX Navigation devices

3.1 *lxn-logger*: Downloading flights from IGC loggers

The program *lxn-logger* can download flights from IGC loggers like the Colibri. When you start the program, it contacts the device (*/dev/ttyS0* by default) and presents you a list of all flights. You will be prompted to enter the number of the flights which should be downloaded.

After a successful download, the current directory will contain the flight file in *LXN* and *IGC* format. The latter is the interesting one, which is required by competitions like the Online Contest (OLC).

3.2 *lxn2igc*: file converter

This is a small utility which converts *LXN* files to the *IGC* format. Its code is contained in *lxn-logger*, so normally you will not need it.

3.3 *lo4-logger*: Downloading flights from LX4000

The program *lo4-logger* downloads all flights from a LX4000 or similar device.

4 Tools for Holltronic (Cenfis) devices

4.1 *cenfistool*

cenfistool can upload files in the Hexfile format to the Cenfis device. The hexfiles may contain firmware upgrades, turnpoints or airspace definitions.

To perform a firmware upgrade, you have to press the dark green and the red button while switching the Cenfis on. Read the instructions on the screen carefully and start *cenfistool* with the "upload" command.

Turnpoint and airspace uploads are launched in the "red button menu".

4.2 *hexfile*

This program can encode files into the Hexfile format, more precisely the Hexfile dialect suitable for the Cenfis, which requires bank switching for 32 kB banks.

In the following sample, *hexfile* decodes the firmware image into binary:

```
hexfile -d -o cfp_v37c.bin cfp_v37c.bhf
```

5 Tools for Zander devices

5.1 *zander-logger*: Downloading flights from Zander loggers

The program *zander-logger* can download flights from IGC loggers like the Zander GP940. When you start the program, it contacts the device (*/dev/ttyS0* by default) and presents you a list of all flights. You will be prompted to enter the number of the flights which should be downloaded.

This software is work in progress, since it cannot produce IGC files yet.

6 Database converters

There are several free-of-charge databases on the net, like Open-Air, and *loggertools* provides the tools to work with these databases.

Most formats are not documented and had to be reverse engineered.

6.1 *tpconv*: Turn point converter

tpconv can convert turn point databases between several formats and supports filtering.

Some formats are richer than others. Keep in mind that information can be lost during conversion.

The following formats are supported:

Welt2000 (read only)	*.txt
SeeYou	*.cup
Cenfis (write only)	*.cdb, *.idb, *.dab, *.bhf
Filser / LXN	*.da4
Zander	*.wz

To convert the SeeYou file *TurnPoints.cup* to a Cenfis Hexfile, enter:

```
tpconv TurnPoints.cup -o TurnPoints.bhf
```

6.1.1 Filters

The `airport` filter removes all turn points which are not actually airports:

```
tpconv TurnPoints.cup -o TurnPoints.bhf -F airport
```

The `distance` filter removes all turn points which are too far away. There are two arguments: first the center (either a turnpoint name or coordinates), and second the radius (including a unit).

```
tpconv TurnPoints.cup -o TurnPoints.bhf -F distance:BERGNEUSTADT:300km
tpconv TurnPoints.cup -o TurnPoints.bhf -F distance:51.03.07N 007.42.26E:200NM
```

6.2 *asconv*: Airspace converter

asconv converts airspace databases between several formats:

OpenAir	*.txt
Cenfis (write only)	*.bhf
Zander (write only)	*.az
SVG (write only)	*.svg

SVG means "Scalable Vector Graphics". This allows you to view airspace files in a SVG viewer. It is an experiment, and very incomplete.

The Cenfis writer produces files which are not working in some Cenfis devices. On others, the Cenfis may crash when there are too many airspaces on the screen at the same time (e.g. 128km zoom near Cologne / Düsseldorf). Holltronic has confirmed that this is due to a firmware bug, and there is no solution yet.

The Zander writer has not been tested yet.

7 Feedback and further development

I am always interested in receiving feedback from users. Just drop me an email to max@duempel.org.

If you want support for your device, I would be happy to implement that. However, I need one exemplar, and all information that might be helpful for reverse engineering.

Documentation from hardware vendors is welcome!

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