

DBI3cli

DigiTool DBI3 Log Download and KML Converter

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1 Overview

With the DigiTool DBI3 plugged into a USB port, **DBI3cli** can download and/or delete LOG files located on the DBI3. When downloaded to the Computer, the log files are stored in a sub-directory based on the DBI3 serial number (e.g. DBI3logs/SN12345) to keep files from multiple DBI3 instruments separated because the filenames are simply timestamps. After downloading, the files can be immediately converted to KML format for display by Google Earth. KML filenames contain the DBI3 serial number to separate multiple instruments.

When the DBI3 is not plugged into a USB port, this application can use the previously downloaded LOG files and convert/re-convert them to KML.

DBI3cli has the ability to *tweak* the KML output of the individual LOG files, trimming extraneous records from the beginning or end, altering the additional data fields included in the KML or shifting the pressure altitude if the altimeter setting was incorrect during the flight.

This application, **DBI3cli**, is written in Python3, runs on Windows 10, Linux, and should run on MacOS.

The Windows 10 and Linux versions have been built as a single self-contained executable that can be copied anywhere on the system and executed without “installation”. The application is also configured as a Python package but this has not been published on any server.

2 First Time Startup

The first time **DBI3cli** is started in interactive mode, it will prompt to confirm some configuration settings that will then be stored for the future executions.

The most import setting is the location to store LOG and KML files. The default should be reasonable for most users, but you may want to change to a cloud backed up directory such as Dropbox to protect and share the logs.

If the first run of **DBI3cli** is non-interactive (e.g. --sync) it will assume *{HOME}/Documents/DBI3logs* and *{HOME}/Documents/DBI3logs/kml* are the correct LOG and KML paths to use.

3 Audit Log File

After the LOG file location has been configured, **DBI3cli** will write an audit log named *audit_DBI3.log* in the LOG directory. This log records every time **DBI3cli** starts, every log copied from the DBI3, and every KML conversion so you can review what has occurred in the past.

The individual audit log file space is limited to 1Mb. When the audit log is about to exceed that space limit it will be renamed to *audit_DBI3.log.1* (any existing *log.1* becomes *log.2* and so on) and a new audit log is opened. During the rename, any existing *log.10* will be lost (i.e. maximum saved log files is 10).

4 DBI3 Configuration Export

When the DBI3 firmware is updated to a new version, the instrument configuration resets to its default settings. While this option does not attempt an automatic recovery, it does dump the current configuration settings to a file so they can be manually re-entered.

The configuration file is written to the LOG directory with the name format of **DBI3_Snnnnnnn_YYYYMMDD_HHMMSS.cfg**

By specifying the interactive command “export show” the configuration will be displayed on the terminal rather than creating the **.cfg** file.

5 Application Configuration

Many options can be set for the application and will be persisted in a config file (*{HOME}/.DBI3config* where {HOME} is the users home directory as defined by the OS). An important configuration item is the path to store the DBI3 Log and KML files. As described above, the first time the application starts

it will setup the paths to use for the LOG and KML files.

The USB Comm port (OS specific) can also be configured, but if it is left unset the application will attempt to automatically find the DBI3 each time it open communication by matching the expected USB registration id (USB VID/PID).

There are other configuration options that affect the defaults used when converting a LOG to KML. In the KML menu, it is also possible to define conversion defaults for an individual Log, overriding the application defaults.

While the inclusion of most additional data fields is configurable, with DBI firmware 1.3 and greater the GPS Altitude is available. It is configurable for the track coordinates to use either pressure or GPS altitude, and the other altitude 'GPS ALT'/'PRES ALT' will always be included as additional data.

Moving log files to a new location

If after downloading/converting some logs you wish to move the log directories to a new location (e.g. a cloud directory).

- Start **DBI3cli** and use the **config** menu to configure the new paths.
- Exit **DBI3cli**
- Move (or copy now and later remove the original location) the old path to the new location.

DBI3cli should start see the logs/kml in the new location.

If the original location is moved or deleted before using **config**, **DBI3cli** will fail to start because the directories can't be found. To recover:

- Create empty directories in the original location (listed in the startup error message)
- **DBI3cli** should now start so you can configure the correct (new) paths.
- Remember to cleanup the original paths.

Application config options (in Main->config menu):

log_path – Directory path to store DBI3 Log files (default `{HOME}/Documents/DBI3logs`). The files will be in a serial number specific subdirectory under this path. (e.g. `{HOME}/Documents/DBI3logs/SN12345`)

kml_path – Directory path to store DBI3 KML output files. (default `{HOME}/Documents/DBI3logs/kml`)

com_port – USB comm port, the name is an OS specific format, config edit will attempt to help. (default *None* = attempt to automatically locate each time)

prefer_gps – If True and the DBI3 firmware is 1.3 or greater, GPS altitude logging is supported and will be preferred over pressure altitude in the track coordinates. If False, always use pressure altitude (default = True)

filter_age_limit – Filter the Log/KML list display to files that are less than filter_age_limit days old.

filter_new – Filter the Log/KML list display to files that are new (newer any any Log/KML currently on the PC)

filter_invalid – Filter the Log list display to only files that are valid for KML conversion (i.e. it has GPS data records)

altitudemode – Google Earth altitude mode for track display. *clampToGround* draws the track on the surface. *absolute* use the Log record altitude and will display the track above (or below!) ground. *relativeToGround* assumes the recorded altitude is above ground level (e.g. zero the altimeter at take off)

extend_to_ground – When the track is displayed above ground, this will draw vertical lines to the ground to show where the track actually went.

kml_use_metric – The additional DBI3 log data (temperatures, speed, ...) can be included as additional data in the KML file, This controls english vs. metric value conversion for the additional data. Google Earth controls the conversion of track point altitudes.

kml_fields – Controls the actual additional data fields that will be included in the KML. Consists of a comma separated list of the following:

- ALL – Selects all of the following fields
- ROC – Rate of Climb
- TOPT – Top Temperature
- AMBT – Ambient Temperature
- DIFF – Computed difference from ambient to top temperature
- SOG – Speed over Ground
- COG – Course over Ground
- BATM – DBI3 Battery voltage
- BRDT – DBI3 internal board temperatures

verbose – Turns on verbose DEBUG output during execution for development testing.

KML edit (*tweak*) options (in Main->kml->edit menu):

trim_start_time - Ignore DBI3 data until YYYY-MM-DD hh:mm:ss (trim the beginning of the Log)

trim_end_time - Ignore DBI3 data after YYYY-MM-DD hh:mm:ss (trim the end of the Log)

prefer_gps – See Application config options.

altitude_offset - floating point offset to the DBI3 reported altitude (adjust for incorrect altimeter setting)

altitudemode - See Application config options.

extend_to_ground - See Application config options.

kml_use_metric - See Application config options.

kml_fields – See Application config options.

6 Modes of Operation

The application has three modes of operation:

- **Interactive Mode** - When started without command line options it will present interactive menus to prompt for command and control operations.
- **Automatic Sync Mode** - When started with `-sync` it will attempt to automatically connect to the DBI3, download all new files (newer than any log file currently in the Log path), and convert them to KML.
- **Single File Mode** - When started with `-file FILE` it will convert the single Log *FILE* into KML, saving it in the same directory as *FILE*.

Interactive Mode

Interactive mode allows you to work with the logs stored on the DBI3 and copy them to your Computer for conversion to KML.

To enter the **logs** menu, the DBI3 must be connected via USB to the computer and powered on. You can view the logs currently on the DBI3 (a filter setting may mask some of the files), select some of the logs and copy or delete them. Deleting logs from the DBI3 cannot be undone but will free up space for more logs (the DBI3 has a lot of available space for logs).

The DBI3 does not need to be connected to enter the **kml** menu. The **kml** menu only works on the logs that have already been copied to the computer. Optional tweaks can be configured on an individual log file which will then be used when the log is converted to KML. A log can be converted to KML multiple times and will overwrite the previous KML output file.

Automatic Sync Mode

The DBI3 must be connected to the computer via USB and powered on before starting in Automatic Sync mode.

In Automatic Sync mode the DBI3 is interrogated for any valid log files that are newer than any currently on the computer. Those logs will be copied to the computer and converted to KML using the application defaults. You can later use the Interactive mode **kml** menu to reconvert with different settings.

Single File Mode

Single File mode doesn't expect a DBI3 or any existing log/kml files on the computer. It is used to convert individual files that you may receive from another pilot. The filename can be anything that is valid and will be used for the output filename, with a kml extension.

7 Interactive Mode Menu Tree

Main menu has the options to set and alter the application configuration and listing filters.

logs menu has the options to download, convert, and delete LOG files on the DBI3.

kml menu has the options to tweak conversion options and convert/re-convert Log files to KML.

```
Main - prompt = (DBI3)
  config - edit application config settings
  exit - exit the program
  export - save/display the DBI3 config settings
  filter - set the list display filter options
  logs - prompt = (DBI3:Logs:SN12345)
    back - return to Main menu
    exit - exit the program
    list - display the current DBI3 Log list and selection status
    select - select lines from the list for later download/conversion
    convert - download and convert the selected log files
    download - download the selected log files
    delete - delete the selected log files on the DBI3
  kml - prompt = (DBI3:KML:SN12345)
    back - return to main menu
    list - display the current Log list and selection status
    edit N - edit the tweak settings for the given list line
    exit - exit the program
    select - select lines from the list for later operation
    convert - convert all currently selected list items to KML
    refresh - refresh the current list
  version - display the current DBI3cli software version
```

8 Release Notes

DBI3 Firmware

This does not replace the DBI3 release notes, it only covers the items that might have an impact on **DBI3cli**.

Fw1.1,1.2 – The initial DBI3 release this program was developed against.

Fw1.3,1.4 – Added GPS altitude and datum to the log file. This provides an altitude that is not dependent on the proper altimeter setting. The GPS altitude can be configured as the preferred Google Earth track altitude. The datum is not currently used by **DBI3cli**.

Fw 1.6 – Usability changes that don't affect **DBI3cli**.

Fw 1.8 – Added Ambient humidity to the log file. **DBI3cli** stores it in the log file but does not currently use the data.

DBI3cli Release Notes

V1.0-1.3 – Internal releases, fixing bugs and improving usability

V1.4 – Improve the trim time entry.

Tested against DBI3 fw1.8

Added ability to export the current DBI3 configuration settings. Fw update clears the settings, especially you wireless temperature IDs.

Added local start/end time to the log and kml list output (kml requires “list long” to see this).

Added audit log for log deletes.

Added more error handling for edge cases.

9 Windows 10 Notes

Starting DBI3cli

Using Windows File Explorer, navigate to DBI3cli.exe that was downloaded to the PC, and double click the file. This will start **DBI3cli** in interactive mode with no command line options.

You can right-click on your desktop and New->Shortcut to create a short cut on the desktop. You will be prompted to navigate to the DBI3cli.exe file and then be given the option to alter the name of the shortcut as displayed on the desktop. Now you can double click the desktop shortcut to start **DBI3cli**.

And like Linux, you can open a ‘cmd’ or ‘powershell’ window and execute DBI3cli.exe with any options desired. The ‘-h’ option lists command line help.