

log2ant-0.1.2: User Guide

Sergei Bolotin, Karen Bayer, John Gipson, David Gordon, Daniel MacMillan

May 9, 2023

Contents

1	Introduction	2
1.1	Requirements	2
1.2	Changes from previous versions	2
1.2.1	Changes in version 0.1.2	2
1.2.2	Changes in version 0.1.1	2
1.2.3	Changes in version 0.1.0	2
1.2.4	Changes in version 0.0.5	2
1.2.5	Changes in version 0.0.4	3
1.2.6	Changes in version 0.0.3	3
1.2.7	Changes in version 0.0.2	3
1.2.8	Changes in version 0.0.1	3
2	Installation	4
3	Using log2ant	5
3.1	Invoking log2ant	5
3.2	ANTCAL format	7
4	Concluding remark	8

Chapter 1

Introduction

This document describes how to use the utility log2ant.

The utility performs extracting various sensors reading from a station log file and store them in an ASCII file.

The utility log2ant is distributed in nusolve package that contains vSolve software and utilities vgosDbMake, vgosDbCalc, vgosDbProcLogs and log2ant. Each of the utilities has its own version number that can differ from distribution version, e.g., the first release of log2ant-0.0.1 appeared in nusolve-0.7.2 package.

The guide covers 0.1.2 version of the software. Since log2ant is a simple utility we do not expect large modifications of the user guide version from version.

1.1 Requirements

See *vSolve User Guide* for the requirements.

1.2 Changes from previous versions

This section covers changes in the software and the user guide from version to version.

1.2.1 Changes in version 0.1.2

Nothing essential was changed.

1.2.2 Changes in version 0.1.1

Nothing essential was changed.

1.2.3 Changes in version 0.1.0

Regular expressions to parse modern log files were updated. An empty string filler was replaced from "n/a" to "DUMMY". Values of dot2pps records are extracted and reported in an ANTICAL file. Frequencies of PCAL sensors are calculated and reported in an ANTICAL file.

1.2.4 Changes in version 0.0.5

Nothing essential was changed.

1.2.5 Changes in version 0.0.4

Nothing essential was changed.

1.2.6 Changes in version 0.0.3

The command line arguments parser has switched to ARGP from GNU C Library.

Processing of log files was improved, the regular expressions were updated.

1.2.7 Changes in version 0.0.2

An ability to extract SEFD evaluation from log files is added. SEFD is calculated by Field System as a result of observing a selected source (using procedure *onoff*). Also, processing DBBC3 dump files is implemented (thanks to Eskil Varenus, Onsala Space Observatory).

A command line option to redirect utility's log output is added. Section *3.1 Invoking log2ant* was modified to reflect these changes.

The utility can process a log where channel setup is changing. That could be useful to process log files of single dish observations.

Support for LOG-ANTAB output format is suspended.

A few bugs were fixed.

1.2.8 Changes in version 0.0.1

Initial release.

Chapter 2

Installation

The source codes of log2ant is distributed along with vSolve software. The latest stable version of the software one can find at <https://sourceforge.net/projects/nusolve> with a name like `nusolve-1.2.3.tar.gz`. Since the software is still in an active development phase, we recommend you use the latest version.

The utility is compiled during compilation of vSolve software. Please refer to vSolve User Guide how to configure, compile and install the software.

Chapter 3

Using log2ant

3.1 Invoking log2ant

To invoke log2ant just type (specifying if necessary the full path to the executable) program name and a file name of a field system log of a station:

```
> log2ant <FS log file>
```

where «FS log file» is a name of input file. The input file can be compressed with gzip or bzip2, the utility will automatically decompress the file if gzip or bzip2 compressors are installed on you system and are in your \$PATH. It is expected that the type of compressed file is determined by the extension. If the file name ends with «.gz», log2ant assumes it was compressed with gzip, if it ends with «.bz2», bzip2 compressor will be used.

The utility also accepts command line arguments. To get the list of these arguments, type

```
> log2ant --help
```

Here are command line arguments that are available at the time of writing:

General options:

-s, --station-name=STRING Set a name of a station to STRING.

Input control:

-3, --DBBC3-dump=STRING Use a file STRING as a DBBC3 dump file.

Output control:

-c, --compress=STRING Use a compressor STRING (gzip or bzip2) to squeeze output ANTICAL file.

-o, --output=STRING Set a name of output ANTICAL file to STRING.

Time interval options:

-b, --t-begin=STRING Set an epoch of the first observation to STRING, data before STRING will be ignored.

-e, --t-end=STRING Set an epoch of the last observation to STRING, data after STRING will be ignored.

Data filter:	
-a, --all	Report all collected data (i.e., both data_valid on and off intervals).
-t, --data-type=STRING	Extract only the specified type of data. STRING can be: cbl (cable calibration), dat (data=on/off), fmt (fmt2gps), met (meteorological parameters), phc (phase calibration), sefd (SEFD evaluation), tpc (DBBC3 TPC), tpi (TPI), tsys (TSYS). There can be more than one "-t" option, e.g.: -t dat -t tsys.
-u, --strip-unused-sensors	Do not output sensors that are not in a log file for some particular time.
Debug output:	
-l, --log-file=STRING	Store log2ant's output in a file STRING, the default is "log2ant.log".
-v, --verbose=NUM	Set a level of log output to NUM: 0 (errors only), 1 (+warnings), 2 (+info) and 3 (+debug output). Default is 1.
Operation modes:	
-, --help	Give this help list.
--usage	Give a short usage message.
-V, --version	Print program version.

The options expect the following meaning.

The option «-3 DBBC3.dump» specifies a file name of the corresponding DBBC3 dump file. The software parses such a file when it is available along with the FS log file. For example,

```
> log2ant -3 vo0202oe.dump.gz vo0202oe.log.gz
```

will process the Field System log file vo0202oe.log.gz and extract data from the DBBC3 dump file vo0202oe.dump.gz.

The option «-a» tells log2ant to collect all readings from a log file. Without this option it will collect data only between data_valid=on and data_valid=off records in a log file.

The option «-b tBegin» is necessary when a log file contains records from several sessions. When log2ant parses a log file, it has this information from a database. The utility log2ant has no such information, so in some cases it is useful to provide epoch of start of the session. It expects an epoch of first observations, tBegin, in the same format as it was used in a log file. E.g.:

```
> log2ant -b 2020.021.17:40:16.09 /500/sessions/2020/vo0021/vo0021gs.log
```

also, a user can use more human notation providing year, month and day instead of Field System format:

```
> log2ant -b 2020.01.21.17:40:16.09 /500/sessions/2020/vo0021/vo0021gs.log
```

The option «-c» turns on using a compressor for the output file. Currently, two compressors are supported: gzip («-c gz») and bzip2 («-c bz2»). In addition, if a user specifies output file name and the name ends with «.gz» or «.bz2», the corresponding compressor will be used automatically and the option «-c» is not necessary.

The option «-e tEnd» is the similar to «-b» option and sets the end of the session. Usually, after the last observation of a session there are measurements of cable length with and without additional cable to determine a cable sign. So, the utility reads records from a log file up to tEnd + 5 minutes.

The option «-o» specifies a file name of the output. By default, log2ant will try to write the file in the same directory where the log file is, modifying name: ".log" is replaced with ".anc" and underscore char, "_", is added before last two chars of the name. E.g., if input file name is "vo0021gs.log", then the default output file name will be "vo0021_gs.anc".

Sometimes a station name in a log file is not correct or not present at all. In such cases a user can specify station name using option «-s stationName».

The option «-t dataType» controls what type of data should be written in the output file. The following types are known to the utility:

cbl	cable calibrations (converted to seconds)
dat	data_valid=on records
fmt	fmt2gps readings
met	meteorological parameters
phc	phase calibrations
sefd	evaluations of SEFD
tpc	DBBC3 tpc readings
tpi	tpi readings
tsys	calculated by FS tsys values

Each of type data can be combined with another one. For example:

```
> log2ant -t cbl -t met /500/sessions/2020/vo0021/vo0021gs.log
```

will extract only cable calibrations and meteorological parameters. If this option is not provided, all found data will be reported.

The option «-v» tunes the level of log output. The possible levels are: error (0), warning (1), informational (2) and debug (3) messages. Currently by default the log level is set to 1, that means that only error and warning messages will be displayed.

3.2 ANTICAL format

The format ANTICAL is currently in a developing stage. In future it could be extended. Current version of the format is available in nusolve distribution in `docs/antcal_specs_???.txt`.

Chapter 4

Concluding remark

Currently, this document is in the developmental stage, its content could change time from time. Check for new versions at the ftp site:

`https://sourceforge.net/projects/nusolve`

If you have questions or suggestions that will improve the software or the User Guide, please e-mail us at:

`<mailto:sergei.bolotin@nasa.gov>`