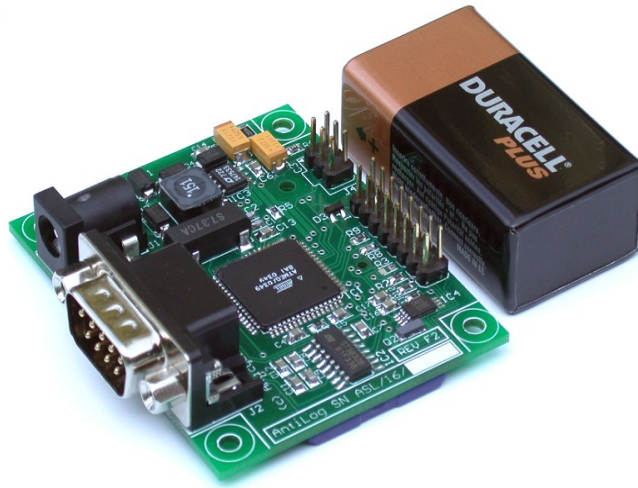


# AntiLogReader Command Line Application User Guide



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## 1. Introduction

The AntiLog RS232 Data Logging System stores all recorded data on solid state FLASH media cards. The current AntiLog product family supports the MultiMedia Card (MMC) format and the Secure Digital (SD)<sup>1</sup> removable media. The OEM version of AntiLog allows direct access to this removable media but the boxed product was designed to be usable by non-technical staff and so the media is not easily extracted from the unit without dismantling it first.

AntiLog deliberately does not use the Microsoft FAT filing system for data storage because the FAT file system is not suited to high reliability in a data logging application where power could be removed from the system at any time. AntiLog uses a custom file system which is highly efficient and fault tolerant. It is therefore not possible to directly read the media content on a PC (using a multiscard reader for example) because the data cannot be 'seen' by a standard PC file system.

AntiLogReader is a stand alone, PC based command line application that can process AntiLog recorded data. AntiLogReader takes a series of command line arguments which are separated by space characters to control its function.

The data source can be media cards (plugged into a multiscard reader on the PC for example), a direct NULL modem serial port connection to an AntiLog unit (AntiLog V4.0 or later required) or from a local media image copy which has already been generated using this application and the COPY command line option. The output from the program can simulate AntiLog output formats, so embedded time stamping, headers and hex dumping options for example are available.

Using the command line options, it is possible to erase the media source following a successful COPY operation. This is useful if you need to 'empty' AntiLog units of recorded data.

## 2. Applicability

AntiLogReader has been designed to work with media written with AntiLog embedded software V3.1 and above. It is also able to process the dual channel data recorded with the new AntiLog V4.0 file system. However, it will not read data written with AntiLog V1.0 to V3.0 because the media file system used in these versions uses sectors on the media not visible using a Microsoft PC card reader. Embedded software upgrades for AntiLog units are available by contacting your AntiLog supplier.

Please note that the current version of the AntiLogReader application does not support real time playback of data. You will need to use real AntiLog hardware to perform this function.

AntiLogReader is currently command line based and so it is assumed that the user is familiar with the concept of command line applications and the use of file and path names in a Microsoft command shell.

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<sup>1</sup> Note that SDHC (SD High Capacity) support for Secure Digital cards is only available starting with AntiLog V5.0

The command line nature of this utility means you can always invoke the application from another application, for example it can be called from within a Visual Basic or other scripting language application to realise an automated data collection and archiving system.

### 3. Installation

The application consists of just one file, `AntiLogReader.exe` which must either be copied to the directory you intend to work in or copied to a directory currently specified in your system path. If you enter `AntiLogReader` at a command prompt with no arguments, the program should produce the following output:-

```
C:\> AntiLogReader
-----
AntiLogReader          (c) Anticyclone Systems Ltd, 2007
Version 3.0 08-Jun-2007      WEB: www.anticyclone.co.uk
-----

AntiLogReader source outname [opts...]
AntiLogReader source CHANNEL n outname [opts...]
AntiLogReader source CHANNEL 1 outname1 [opts...] CHANNEL 2 outname2 [opts]

source      = Drive letter A through to Z, COMn, COMn:baudrate or
              file name of image previously written with COPY option.
outname     = Name of file to create to receive output stream data.
              If not supplied, output will go to screen (CON:).
opts       = None or more of the following, separated by spaces:-
  CHANNEL n = Extract data for channel 1 or 2 (default is CHANNEL 1)
  HEADER    = Expand session headers into output stream.
  TSTAMP    = Expand time stamp information into output stream.
  CHANNELID = Expand AntiLog channel identifier into output stream.
  RAWTSTAMP = Expand time stamp and channel identifier as 6 byte binary.
  DIRONLY   = Show directory entry only.
  HEX      = Stream the output as a Hexadecimal ASCII dump.
  COPY     = Create an exact copy of media content to output stream.
  ERASE    = Erases source data after download when COPY option used.
  CONFIRM  = Will not prompt for confirmation of ERASE after COPY.
```

### 4. Making a media image copy

You can use AntiLog reader to create a complete media copy of the MMC/SD card content. This is a highly recommended course of action because you then have a local copy of every aspect of the logged data on local storage which you can subsequently go back to and extract the data in the format you want using further invocations of AntiLogReader.

Although AntiLogReader can produce a full media image copy, only the sectors from the media that contain valid AntiLog recorded data are uploaded, not every single sector on the media.

You can perform a media image copy in one of three ways. In all three cases, you use the COPY command line argument to instruct AntiLogReader to create a media image copy.

#### 4.1 Uploading a media image via a PC serial port

You can upload a complete media image copy through the AntiLog serial port using a PC serial port and an RS232 NULL modem cable. Note that this will only work if your AntiLog unit is running AntiLog V4.0 or later. AntiLog needs to be switched on and in the playback mode before you start. The following example shows the syntax to upload an image copy from an AntiLog V4.0 unit connected to the PC COM1 serial port to a local file called

myimage.antilog. The PC serial port and the AntiLog playback menu must be set to 11500 baud, 8 bits no parity for the example to work (the default for AntiLogReader).

```
AntiLogReader COM1 myimage.antilog COPY
```

The following shows the same operation but with the AntiLog menu system set to 19200 baud.

```
AntiLogReader COM1:19200 myimage.antilog COPY
```

AntiLogReader will not function with the serial port in this mode if:-

- You are using a version of AntiLog less than V4.0.
- The menu baud rate and the AntiLogReader baud rates are different.
- Another application is already using the specified serial port on the PC.
- The RS232 cable connection is not correct, you should use a NULL modem connection – check you see the AntiLog menu with a terminal program first.
- AntiLog is not switched on or is not in playback mode.

## **4.2 Uploading data directly from media cards**

Extract the AntiLog media card (OEM version) and place it into a multiscard (or MMC, SD card specific) reader on the PC. When you have determined the drive letter for the card, use the following syntax to image an image copy of the data on the PC (the following example assumes the media card has been inserted into drive E).

```
AntiLogReader E: myimage.antilog COPY
```

If the operation fails claiming there is no media in the drive , try re-inserting the media card and trying again as some multiscard reader devices appear to miss the first disk insertion/extraction event.

## **4.3 Copying data from a previously copied image file**

You can make another copy of a locally stored image. This function is normally more efficiently performed by the operating system itself so the example below is for completeness only.

```
AntiLogReader myimage.antilog secondcopy.antilog COPY
```

## **5. Playing back recorded data**

You can play back recorded channel data from one of the three media sources, a direct NULL modem cable connection to an AntiLog unit (AntiLog V4.0 or later required), direct from AntiLog media plugged into a multiscard reader on the PC or from a local image copy on the PC previously created with the COPY command syntax. The following examples show how to extract channel 1 data (the default) to a file called `ch1.txt` for the three media source types:-

```
AntiLogReader COM1 ch1.txt  
AntiLogReader E: ch1.txt  
AntiLogReader myimage.antilog ch1.txt
```

If you do not specify a destination file name, the output will be printed to the current screen output. For example:-

```
AntiLogReader myimage.antilog
```

## 5.1 *Playing back dual port data*

AntiLog V4.0 can record up to two channels of RS232 data simultaneously. To extract specific channel data from a data source, you use the CHANNEL command line keyword. The following examples show how to extract both channels of data (channel 1 and channel 2) from three example data sources.

```
AntiLogReader COM1 CHANNEL 1 ch1.txt CHANNEL 2 ch2.txt
AntiLogReader E: CHANNEL 1 ch1.txt CHANNEL 2 ch2.txt
AntiLogReader myimage.antilog CHANNEL 1 ch1.txt CHANNEL 2 ch2.txt
```

Keywords that appear after the CHANNEL keyword apply to that channel only. In the following example, channel 1 data is extracted as normal with time stamping enabled, but channel 2 is extracted as a hexadecimal dump. Full details of all command line keywords and options available in AntiLogReader appear in the next section (Section 6).

```
AntiLogReader E: CHANNEL 1 ch1.txt TSTAMP CHANNEL 2 ch2.txt HEX
```

You can also extract a single channel directly with the CHANNEL keyword:-

```
AntiLogReader E: CHANNEL 2 ch2.txt HEADER TSTAMP
```

## 6. Command Line Options

When playing back data to a file or to the screen, you can specify keywords on the command line to control the format of the outputs. These keywords can in many case be combined to increase the number of output options available. The keywords are not case sensitive so they may appear in upper, lower or any other combination of case.

The channel output options available in AntiLogReader have been designed to simulate the output options available from a real AntiLog unit, therefore some of the concepts discussed in this document are further covered in more detail in the AntiLog RS232 Data Logging System User Guides <sup>[1][2]</sup>.

### 6.1 *Keyword – HEADER*

Expands the session header into the output stream as an ASCII text line. The session header will include a session number (starting at 1), session start time and date and the AntiLog serial number of the unit the data was recorded on. The following is an example of a session header:-

```
$SESSION,1,V,05-Dec-2004,22:16:23.266,ASL/16/200*25
```

### 6.2 *Keyword – TSTAMP*

Expands time stamps in the recorded data into the output stream as ASCII where appropriate. Specifying this keyword when no time stamping information has been recorded to the media

log file has no effect on the output. The date and time string are represented as two comma separated strings for easy text import into a spreadsheet applications, such as Microsoft Excel.

### **6.3 Keyword – CHANNELID**

Expand AntiLog channel identifier into output stream. The channel number is output as a single character, either '0', '1' or '2' followed by a comma. A '1' shows the data was recorded on the AntiLog channel 1, a '2' shows the data was recorded on AntiLog channel 2 and a '0' means the data was sourced from an internal event such as a button push.

If this keyword is specified with the TSTAMP keyword, the channel ID will always appear before the date and time stamp text regardless of the order of the keywords on the command line for a given data channel.

### **6.4 Keyword – RAWTSTAMP**

Expands the raw time stamp as a six byte raw binary sequence. The format of this time stamp is proprietary so please contact Anticyclone Systems for details if you need to use raw binary time stamps in your application.

### **6.5 Keyword – DIRONLY**

Displays directory information on the source media image only and does not access or process further recorded data. If the source media contains dual channel data, the data count for both channels will be shown. Using the DIRONLY option is a good way to establish you have communication with the media source (e.g. Multicard reader drive or COM port).

### **6.6 Keyword – VERBOSE**

Outputs extended debugging information for diagnostic purposes.

### **6.7 Keyword – HEX**

Outputs the recorded channel data in three columns. The first column shows a byte index into the data, the second column is a hexadecimal dump of the data itself and the last column is an ASCII test representation of the data column.

If you combine this keyword with the TSTAMP keyword then you can see a time stamp followed by a hexadecimal dump until the next time stamp is encountered. This is especially useful for data recorded with the new 'N' byte binary time stamping mode in V4.0.

### **6.8 Keyword – COPY**

Completes a complete image copy of the media source to the supplied destination file. The local copy can then be used as the source for further invocations of AntiLogReader without having to have the original media or the source AntiLog unit present. See section 4 for more detail on performing a COPY operation.

## 6.9 Keyword – CHANNEL

You can extract multiple channel data from a media image source file recorded using AntiLog V4.0 or later in one pass. Specifying the CHANNEL keyword on the command line followed by a channel number (either 1 or 2) defines the channel for which all following keywords and file names apply. For example, to extract two channels from a media image file called 'mytrial.antilog' you can use the following syntax:-

```
AntiLogReader mytrial.antilog channel 1 ch1.txt channel 2 ch2.txt
```

You can combine keywords for given channel as long as they appear *after* the channel keyword, not before. The following example shows how to extract two channels from media supplied in G:, channel 1 is output as a binary file but with a leading ASCII session header and the second channel is output as a hexadecimal dump with time stamps.

```
AntiLogReader G: CHANNEL 1 nav.bin HEADER CHANNEL 2 HEX TSTAMP ch2.txt
```

If no CHANNEL keyword is present on the command line, channel 1 is assumed.

## 6.10 Keyword – ERASE

If you specify the COPY option from a serial port connection or a multiscard reader source, you can erase the data after a successful data copy by specifying the ERASE keyword. AntiLogReader will prompt you to confirm the operation before the actual copy and erase operation is performed. If you do not wish to be prompted for confirmation (for example, if you have embedded the AntiLogReader command into a Visual Basic script), specify the CONFIRM keyword.

If you make a mistake and specify the ERASE keyword and you would like to 'undo' the erase operation, replace the media in a real AntiLog unit (if you erased the media with a multiscard reader) and run the 'Media Recovery' item in the 'General' menu in AntiLog.

## 6.11 Keyword – CONFIRM

Use the CONFIRM keyword when you want to use the ERASE keyword but don't want AntiLogReader to prompt for confirmation to continue with the copy and erase operation.

# 7. The AntiLog file system

AntiLog does not use the Microsoft FAT system media format for media storage. The reason is, AntiLog is designed to be a high quality data logging device and the FAT file system does not lend itself to high reliability if power is suddenly removed from a system whilst file access is in progress.

The AntiLog file system will only lose a small amount of bytes (worst case, up to the last 508 bytes sent) in case of a total and sudden complete system power failure. When AntiLog is next powered on, it will automatically recover all of the recorded data up to the point when the logging stopped. Note that this Media Recovery function can be invoked manually using the AntiLog playback menu system but at present, there is no Media Recovery option in AntiLogReader.

If you insert a media card from AntiLog into a PC multcard reader, you will need AntiLogReader to extract the recorded data.

## **7.1 AntiLog Version Compatibility**

If you record serial port data using an AntiLog system running V4.0 of the embedded software and extract the media, it will not be possible to play back the data from this media on an AntiLog unit running V3.2. This is because V4.0 supports a new version of the filing system to support dual port logging and it is not compatible with the previous V3.x file system.

AntiLog V4.0 can read media created with previous versions of the AntiLog embedded software. You are however strongly advised to perform a 'Media Erase' from the AntiLog menu system before attempting to record new data with a V4.0 system to allow this data to be successfully imported into AntiLogReader.

AntiLogReader is only able to process media cards containing data recorded from AntiLog units running V3.1 and above.

## **7.2 PC compatibility**

AntiLog V3.2 (and previous versions of the embedded software) do store recorded data in certain areas of the media cards normally reserved by the PC FAT filing system for directory entry and file allocation storage. This of course would never normally be an issue but when the media is inserted into a PC multi-card reader socket, some PC's try and 'auto load' the directory content and then discover it looks corrupt.

On rare occasions, it is possible that the PC will try and 'fix' the FAT directory structure and hence AntiLog recorded data may get corrupted. One of the ways to prevent this happening is to disable the 'Auto Load' feature for the multcard reader drive on the PC and ensure you don't try and open the drive under the PC operating system to see the directory structure.

AntiLog V3.3 and above get around this problem by only writing recorded data in the 'data section' of a FAT partition. The advantage is that no corruption is possible but the disadvantage is that disk storage that would normally be used by FAT directory and file allocation information is not usable and hence it is wasted.

If you perform a full format (or PC 'Quick' format) on an MMC or SD media card plugged into a PC multcard reader slot which has previously been used to record serial port data using AntiLog V4.0, you may notice the data is still completely intact when it is plugged back into AntiLog. The reason is because the PC doesn't actually format all of the media sectors when asked to and the data area where AntiLog stores its data is not overwritten.

## 8. References

1. AntiLog RS232 Data Logging System User Guide, DOC/AntiLog/UG/2003001\_3.3e
2. AntiLog RS232 Data Logging System User Guide, DOC/AntiLog/UG/2003001\_4.0e

## 9. Abbreviations

COM	Serial Communications Port
FAT	File Allocation Table (Microsoft file system)
GPS	Global Positioning System.
MMC	MultiMedia Card.
OEM	Other Equipment Manufacturer.
PC	Personal Computer.
RS232	A common physical interface standard specified by the Electronic Industries Association (EIA) for the interconnection of devices.
SD	Secure Digital media.
SDHC	SD High Capacity