



USER
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WATFORD ELECTRONICS DDFS USER GUIDE

High Speed serial data transfer for the BBC B and Master Series | by Martin B

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Introduction

In addition to the UPURS ROM suite, the UPURS cable can be used for data transfer purposes from filing systems other than the Acorn DFS. The first alternative filing system that has support for exporting disc images is the Watford Electronics DDFS.

The addition of export only functionality for the Watford Electronics DDFS to UPURS provides users with the capability to export disc images for data recovery or archiving purposes.

The UPURS Watford Electronics DDFS utilities have been tested using the WE DDFS version 1.54T and in fact can export a WE DDFS floppy disc image even where the host BBC Micro is running a suitable 177x compatible Acorn DFS in ROM.

Support for reading WE DDFS is dependent on there being a 177x disc controller installed in the BBC Micro. These tools are therefore incompatible with BBC Micro's that have an original 8271 disc controller fitted.

Using UPURS - WE DDFS utilities

An overview

The UPURS of WE suite supports just two disc based commands for the export of single sided and double sided DDFS formatted floppy discs and follow the same format as their Acorn DFS counterparts as follows.

- *UPXSSDD <drv> [F] [I] Exports the image of a physical SSD to the connecting computer.
- *UPXSSDD <drv> [I4|I8] Exports the image of a physical SSD to the connecting computer.
- *UPXDSDD <drv> [F] [I] Exports the image of a physical DSD to the connecting computer.
- *UPXDSDD <drv> [I4|I8] Exports the image of a physical DSD to the connecting computer.

Creating a disc image from a physical floppy disc

*UPXSSDD <drv> [F] |[I[4|8]]

*UPXDSDD <drv> [F] |[I[4|8]]

Creating a disc image of a physical floppy disc on the BBC Micro is achieved using one of two commands, UPXSSDD and UPXDSDD. The syntax is the same for UPXSSDD and UPXDSDD and the examples below will work for both commands.

To create a contiguous image of the used area of the source disc, at the command prompt on the BBC Micro type the following command.

*UPXSSDD <drv> where *drv* can be a value between 0 and 3.^{1 2}

The BBC Micro will start the process of sending data to the connected computer but will wait for the user to signal that the connected computer is ready to receive. At this point, **do not** press the [SPACE BAR].

¹ Where UPXDSDD is used, the value of *drv* must be between 0 and 1.

² This instance of the command can only be successfully used where the WE disc has a standard size catalogue. If the disc has an extended (62 file) catalogue, the command must be appended with either the I4 or I8 switch.

For Windows

Moving to the connected computer, using the data settings for the Hercules software outlined above, choose the “Log to File...” feature from the context menu available on the right click of your mouse. Choose a suitable name for the disc image e.g. test.ssd and click open.

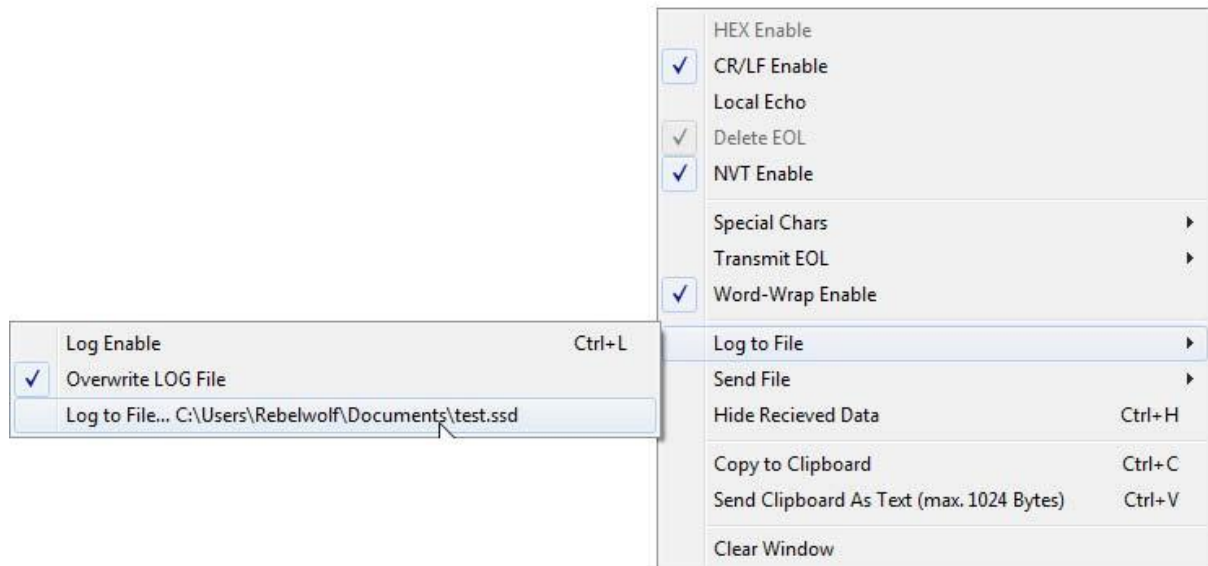


Fig. 1 - Configuring the Log to file options using the Hercules menu

Next, use the key combination of CTRL+L or the context menu option of “Log Enable” to begin logging any data received by the connected computer to the file ‘test.ssd’ then **Open** the Serial connection to the BBC Micro before finally, moving back to the BBC Micro, press the [SPACE BAR] to commence sending data to the connected computer.

When the BBC Micro completes the sending process, it is important to check that the number of bytes transmitted by the BBC Micro is the same as the number received by the destination PC. Where the number of bytes are different, please refer to the troubleshooting guide for further information.

If the byte counts are the same, use CTRL+L key combination or the “Turn off Logging” option in the context menu to close the received file.

For Linux

On your Linux system, click the CuteCom Open File button (labelled "...") and a file selection dialogue box will appear similar to figure 5 below. (You may need to uncheck the "**Log to:**" button to enable this selection).

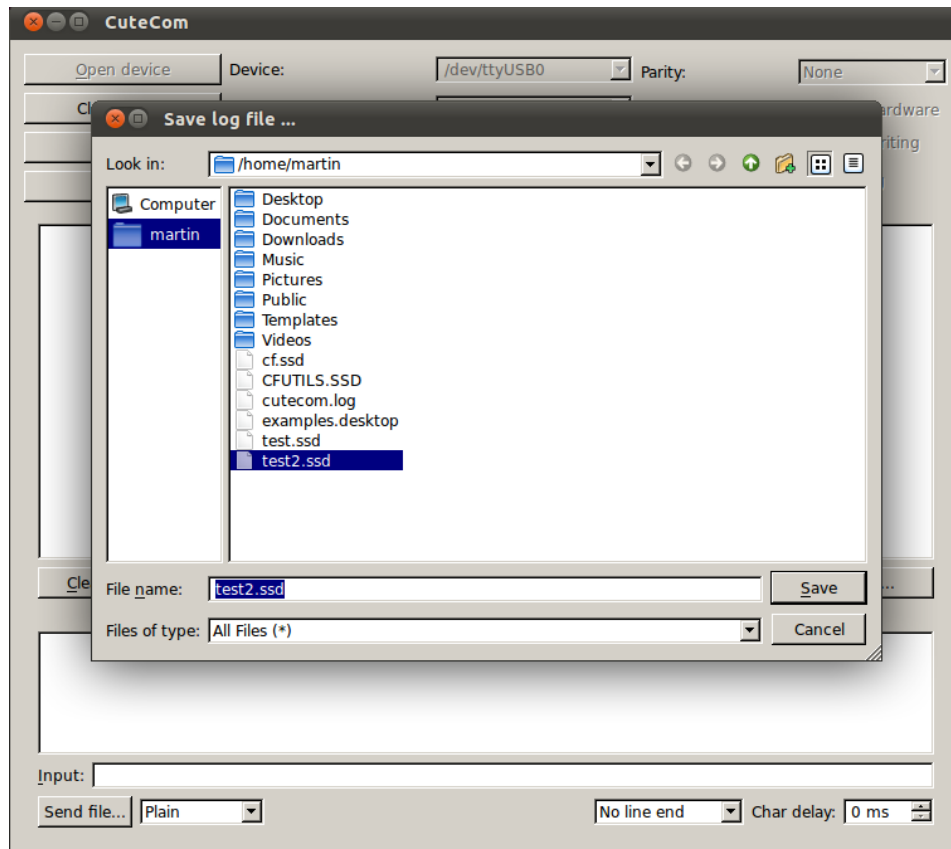


Fig. 2 - Selecting a destination for the transferred data to be stored

Navigate to where you want to store your received file and enter a suitable filename and click "**Save**". Ensure "**Log to:**" is selected in the drop-down box and tick the box to the left of it. Press the [SPACE BAR] on your BBC Micro to initiate the transfer.

When the BBC Micro has completed transferring the entire disk image, it will be signalled with the message "Image Complete".

When the transfer is complete, double check the number of bytes sent reported by the BBC Micro with the number of bytes received by the destination PC by checking the file size. If the byte counts are different, please refer to the trouble shooting section for more assistance.

Note: If you are to receive multiple files from the BBC, you will need to uncheck the "**Log to:**" box and specify a new name for each file you receive using the process described immediately above.

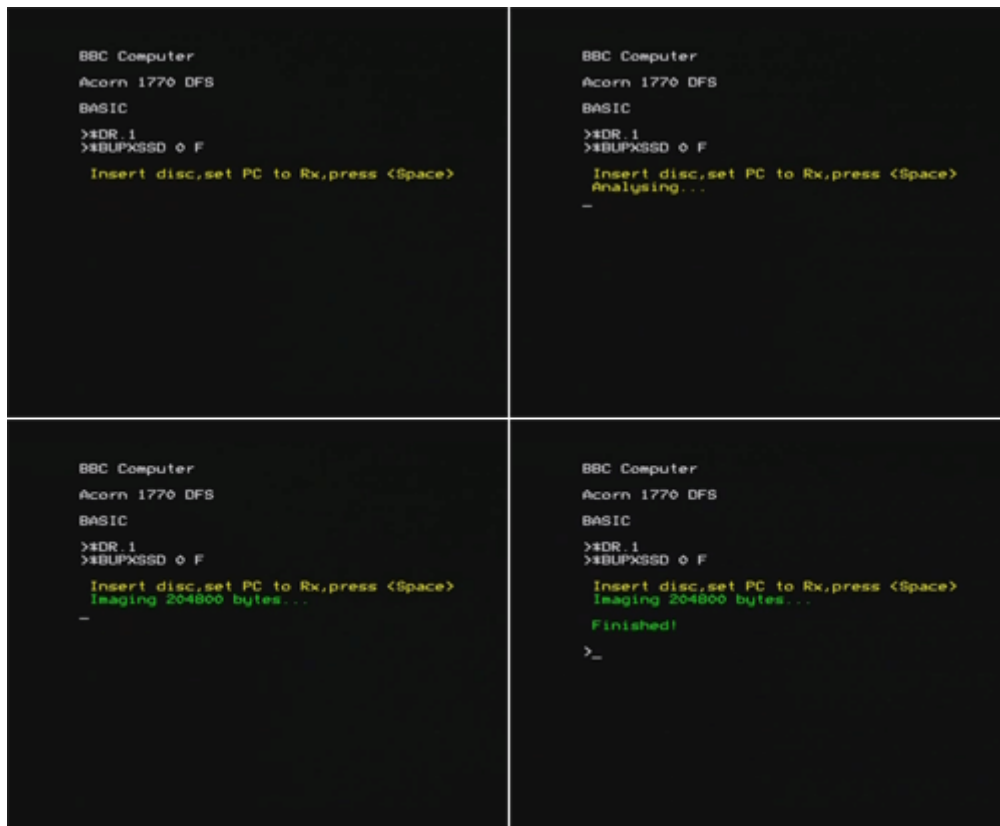


Fig. 3 - Showing the process of imaging a single sided floppy disc using the F parameter.

Advanced options

UPXSSDD and UPXDSDD both have several advanced command line options allowing for greater control over how a disc image is created including the recovery of data from corrupt or copy protected discs.

Parameters

No Parameters

Using UPXSSDD with no parameters will create a contiguous image of the used area of the source disc as determined by the analysis of the DFS directory held in Track 0. Any read errors will immediately abort the process reporting 'Fatal error' for Track 0 errors or 'Read error' for any other track. This feature will only work where the disc contains a standard size catalogue. Where an extended 62 file catalogue is being used, the use of I4 or I8 should be used.

F - Creating a full disc image

The optional parameter "**F**" is used to force UPXSSDD and UPXDSDD to create a (**F**)ull image of the disc in the designated drive. This option may be useful where the directory structure on the disc may not reflect the true contents of the disc. Any read errors will immediately abort the process reporting 'Fatal error' for Track 0 errors or 'Read error' for any other track.

NOTE: The use of "F" is recommended when archiving original software unless you are confident that the disc has no 'hidden' data and the directory listing is a true reflection of the contents of the original disc.

I, I4 and I8 - Creating a full disc image from a corrupt or irregular floppy disc

The parameters "**I**", "**I4**" and "**I8**" are used to perform disc imaging, (**I**)gnoring any errors that may be encountered during the read process. This allows a disc with missing, out of sequence or invalid tracks to be imaged.

The use of "**I**" is the equivalent of using UPXSSDD without any parameters producing a contiguous image of the used area of the floppy disc as determined by the inspection of a valid Track 0 directory list, "**I4**" and "**I8**" implicitly uses the "**F**" parameter thereby imaging an entire 40 or 80 track disc respectively. The use of "**I**" can only be considered where the disc contains a standard size catalogue. Where an extended 62 file catalogue is being used, the use of I4 or I8 should be used.

If a read error is encountered when attempting to read Track 0 with option "**I**", the imaging process will fail whereas, "**I4**" and "**I8**" will image the entire disc regardless of the presence of a corrupt track 0.

Where a track cannot be read, valid track data will be sent to the receiving PC but will contain a contiguous block of bytes of the value &FA.

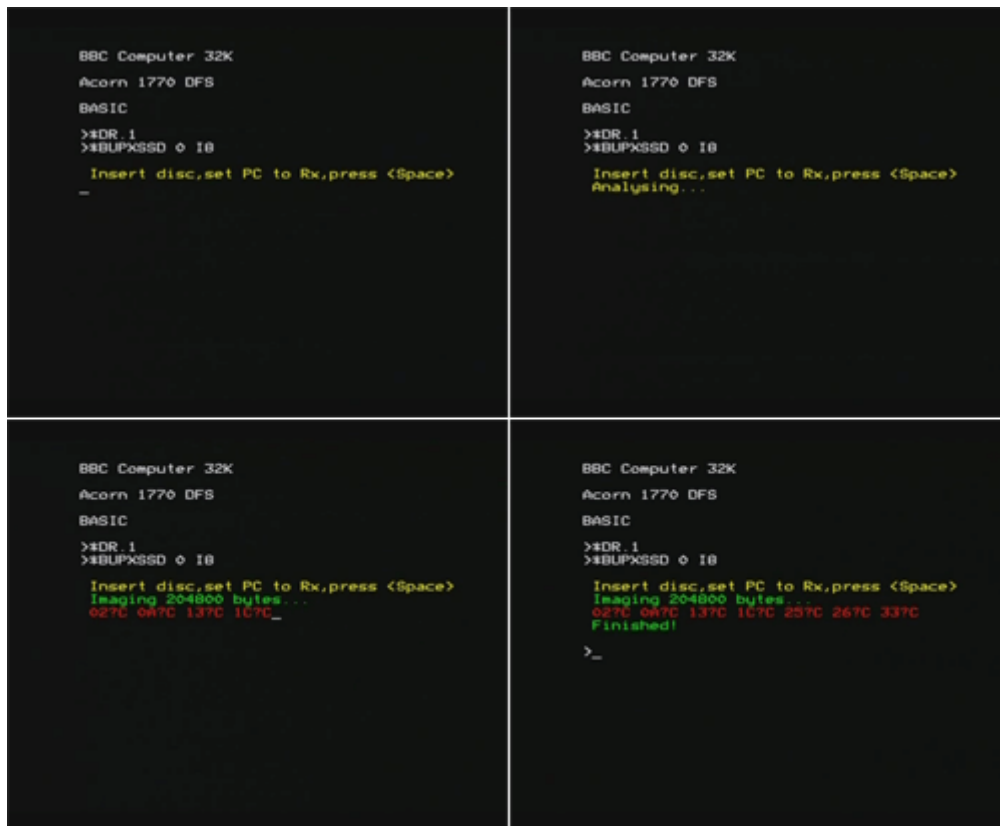


Fig. 4 - Four screenshots show the use of the I8 parameter on a floppy disc with 7 faulty tracks.

When UPXSDD encounters a fault on the floppy disc it is reading, if the “I”, “I4” or “I8” parameter are used, the error is reported but the imaging process continues regardless in an effort to recover as much data from the disc as is possible. Errors are reported to the user in the format of “Track?Error” so “02?C” is reporting that track 2 has the error code “C” which represents “Sector Not Found”.

When using UPXDSD, the errors are colour coded to provide a distinction between the two sides of the disc. Errors in red indicate an error in the primary disc surface (i.e. 0 or 1), errors in yellow indicate an error in the secondary surface (i.e. 2 or 3)

UPXSDD Error codes

UPXSDD returns the actual floppy disc controller error code extracted from the fault byte. These codes differ from the Acorn DFS error codes and are as follows:

- 4 - Clock Error
- 6 - Sector ID CRC Error
- 7 - Data CRC Error
- 8 - Drive Not Ready
- C - Sector Not Found