

The BEAR HARDWARE
1770 ADOS V1.0

is a 4K driver software package for the AFDC floppy disk controller used with the Acorn Atom computer, and is produced under licence from ACORN COMPUTERS LTD.

The software is based on the ATOM DOS (copyright ACORN COMPUTERS LTD) to ensure disk compatibility, but has been totally restructured to take advantage of the advanced features of the AFDC hardware in the interests of reliability and performance.

The ADOS V1.0 is currently presented in a 2532 EPROM. This presentation may be changed subject to part availability. The code is located at &E000, and expects the base address of the AFDC to be set at &OFF8.

The ADOS supports up to eight surfaces (four double sided drives) at single density. 80, 40 or 35 track drives may be mixed, as may single and double sided drives and drives with differing step rates.

Throughout this manual, the term "READY DRIVE" means a drive that exists, contains a valid disk, and has its door closed ready to go. The term "NOT READY DRIVE" means a drive that does not exist, is empty, or has its door open. In common with other disk controllers, the AFDC cannot distinguish between a not ready drive and a drive that does not exist.

Words which converse with the AFDC are called "RESERVED WORDS". All ADOS reserved words are preceded by an asterisk (*), to tell the Atom to pass them to the ADOS instead of the OS ROM.

In addition to the ADOS core reserved words, the Atom BASIC commands LOAD and SAVE (no leading asterisk) will perform as normal, except that the SAVE is conditional (see *SAVE). Surface parameters cannot be used, however, so a *CAT is recommended to change surfaces if you want to use these commands. Note also that the Atom sequential file statements are not supported by ADOS V1.0. The error message "NOT IMPLEMENTED" will be generated if these statements are encountered.

Data are primarily stored on disk as FILES in a DIRECTORY. Each directory is associated with one disk surface, and can hold the details of up to 31 files as well as a surface TITLE, which is displayed when CATaloguing. Each file has a NAME, which can be up to seven printable characters long, but may not include spaces, a QUALifier, which is an eighth character set in advance to divide the directory into different regions, a START ADDRESS and END ADDRESS which encompass the data in memory at the time it is stored on disk, and an EXECUTION ADDRESS, which is an address in memory to which program execution is passed by some reserved words after loading the file from disk.

All disk access reserved words can be optionally followed by DRIVE and SIDE parameters. In the absence of these parameters, the current surface is used for all operations. When using parameters, both must be specified. On initialisation, ADOS sets the current drive and side as 00, so users with only one single-sided drive can omit parameters always.

WRITE operations to disk are always performed on a specific surface, either by default or by parameter direction. READ operations from disk can either be directed from a specific surface or GLOBAL, when the entire theoretical stack of eight surfaces is searched until the file is found. Not ready drives are bypassed.

PARAMETER DEFINITIONS

IMPORTANT NOTE

The & symbol in this manual should be interpreted as HASH. It is printed in this way due to the character set of our printing equipment only.

Core reserved words are entered in upper case, and may not be abbreviated. Any filename may become a user reserved word, and upper or lower case may be used in filenames.

[] items shown in square brackets are optional. DO NOT type in the brackets. Where two or more optional items are mutually exclusive, this is shown by a slash "/" between them. The slash should not be entered.

nn surface number.

The first character is the DRIVE number in the range 0-3. The second character is the side: 0 or 1. If the surface specification option is used, both parameters must be entered. Unless the surface option is used, the current surface is retained, except on early termination of stack search during CATS and INFOS, when the system can be instructed to point to the last displayed surface. On entry to ADOS, surface is set to 00.

oq file qualifier.

This is an ascii hex value in the range 00 through 7F, which is entered without

a preceding hash.

SSSS file start address.

This is the start address in hex (without preceding hash) of the memory block to be used for the file transfer.

EEEE file end address.

This is the end address +1 in hex (without preceding hash) of the memory block to be used for the file transfer.

XXXX file exec address.

This is the address in hex (without preceding hash) to which execution will be passed after loading a file under auto-run operations.

NAME filename.

This is the filename to be used for the data transfer. Any string of up to seven printable characters not including spaces may be used. Filenames should be enclosed in quotes if they start with numbers (unless preceded by surface parameters), start with or consist of core reserved words, or contain spaces. Otherwise quotes are not needed except by BASIC LOAD and SAVE.

The exception is the NAME used as a TITLE. This can be eight characters long, and can include spaces if enclosed in quotes.

CORE RESERVED WORDS

*DOS

enters ADOS from power-on or after BREAK (reset). The first call after switch-on performs a non-destructive memory test.

*DOS calls each drive in turn, searching for a file called BOOT in QUAL 20. The file is auto-run if found, otherwise the system quits when all theoretical drives have been tested. (ESC) can be held down at any time to abort the search. *DOS may be used from inside ADOS to re-initialise to drive 00 without disk access. This last option does not cause a BOOT. To reboot from inside ADOS, either a *COLD or a *BOOT should be used.

*TAPE

exits from ADOS without the need to hit BREAK, and points the file vectors to the COS.

*COLD

performs a cold restart from inside ADOS. This can be used in emergency if the Atom crashes inside DOS, but is mainly used to perform the non-destructive memory test and user reboot at any time.

*MON

generates a display of file parameters

on every subsequent file transfer.

*NOMON

Turns off the MON option. Entry mode is NOMON.

*QUAL^aoo

Sets the ^a qualifier (eighth, system controlled, character of the filename). Qual can be followed by any hex two-digit value (oo) in the range 00 through 7F. The hash is not needed. Alternatively, QUAL without parameters sets the qualifier automatically to 20 (space), which is the default qualifier for Atom disks. Only those files with the current qualifier are available for reading and writing at any time, but the same filename may appear in more than one qualifier. This allows programs to be saved by version number during development. When preparing disks for transfer to BBC micro, consult your manual to determine the suitable qualifier.

*SURF

reports the currently selected drive and side.

*CAT[S]/[nn]

displays the filenames on the specified or implied target surface in the order they are stored on disk, from the centre outwards. The surface title, surface number and current qualifier are

displayed at the top of the screen, followed by the filenames, their qualifiers, and an inverse "L" where files are protected.

*CATS is the global option of *CAT. It takes no parameters. The surface is set by ADOS to 00, and the contents of all ready surfaces are displayed in turn, waiting for a keypress between screens. The current (user selected) surface is restored on auto exit. See later "CONTROL KEYS".

*INFO[S]/[nn] [NAME]

causes a display of files by their names and parameters. An optional filename causes the specified file details to be displayed, otherwise a complete specified or implied surface is displayed in the order of storage on the disk surface from centre outwards. The filename and all associated parameters are displayed, one file per line. A full directory covers a little more than two Atom screens, so screen control is used to allow easy reading. The parameters are displayed in an identical manner to the specification for a SAVE and the MON display, so the COPY key can be used for rapid file transfer to new disks.

*INFOS is the global option of *INFO. It takes no parameters. The surface is set by ADOS to 00, and the contents of all ready surfaces are displayed in turn, waiting for a keypress between screens. The current (user selected) surface is restored on auto exit. See later

"CONTROL KEYS".

*SAVE[nn] NAME SSSS EEEE [XXXX]

This is the primary storage (write) instruction. The reserved word is followed by optional surface parameters, then the filename, start, end and execution addresses. The execution address can be omitted, when it defaults to the start address. *SAVE is conditional. If the chosen filename already exists on the target surface, the user is prompted to EXECute, QUIT (abort save), or ReNAME the file. Renaming a file with an extant name re-enters the process, so as many retries as necessary can be performed.

*&SAVE[nn] NAME SSSS EEEE [XXXX]

N.B. For & read HASH. This is an UNCONDITIONAL alternative to SAVE. The file is saved to disk using the specified name regardless of the presence of the name in the current directory. Any extant file of the same name is overwritten, and cannot be recovered.

*LOAD[S]/[nn] NAME [SSSS]

is the primary read operation from disk. The specified file is transferred to memory and execution is returned to the user program. An optional base address may be provided, otherwise the base address from which the file was saved is used.

*LOADS is the global option of *LOAD. It searches the whole ready stack for the specified file and does a LOAD if the file specified is found.

*PROT[nn] NAME

secures a file against overwriting or deletion. PROT is cleared by CLEAR. While a file is protected, an inverse "L" is displayed adjacent to its name in the catalogue and info displays.

*CLEAR[nn] NAME

removes the write protection provided by PROT.

*KILL[nn] NAME

deletes a file from the directory. Killed files are not recoverable. Kill is aborted if the disk is protected by a tab, or if the file specified is protected by PROT.

*COMP[nn] NAME

does a byte-by-byte comparison of the specified file with the block of memory delimited by the file's parameters. Immediate verification of a saved file is thus possible, but you cannot COMPare a relocated file. The routine exits with an error specification on the first byte mismatch.

*TITLE[nn] NAME

assigns an eight character title to a

disk surface. The title is displayed in the catalogue. BBC Micro and Atom 8271 disk titles, which are 13 characters long, are truncated in the ADOS display, and the balance of the ADOS title is occupied by spaces for compatibility with BBC and Atom 8271.

*NAME

is one of the most powerful features of the core reserved word set. A user filename becomes a reserved word when specified alone. The file is searched for throughout the disk stack, and when found, it loaded and auto-run. Files to be used in this manner must be *SAVED, and valid execution addresses provided. Any BASIC program may be auto-run using this feature without special coding, by providing an execution address of F141. After BASIC has finished running, the page pointer (?18) reflects the location of the program. On completion, the disk stack points at the source surface surface from which the file has been transferred, or to the previous user surface if the file is not found.

CONTROL KEYS

During stack search operations, (SPACE) and (ESC) have been programmed to control the stack search and the screen. (ESC) generally aborts the stack search, and (SPACE) performs our version of PAGE MODE during display. Conventional Atom page mode is always OFF after exit from an ADOS stack display.

It may take a bit of practice to get used to the finer points of these controls, as they are very versatile, but the fundamentals are as follows:

*DOS from outside, and *COLD

Holding down (ESC) immediately after pressing the (RTN) to enter the reserved word will abort the search for BOOT. You will have to be quite quick on warm (second and subsequent) calls to *DOS, but the memory test on *COLD and cold *DOS (first time after switch-on) give you plenty of time.

*NAME

Pressing (ESC) aborts the search for the filename. If you terminate on a ready surface, you will remain on that surface. Termination on a not ready surface will restore the user-selected surface. The main use for this is in case you find you have mis-typed either the filename or a core reserved word, as all valid words not in the core set are searched for on disk.

*CATS, *INFOS

The information is displayed one screen

at a time. As each screen is finished, the block cursor starts flashing. At this time, <SPACE> moves on to the next screen and/or disk surface, or <ESC> exits from the operation. *CATS displays one surface per screen, and *INFOS takes a little over two screens per full surface (31 files). The surface number is displayed on each screen. During these operations, not ready surfaces are bypassed with a small time penalty. <ESC> from a ready surface sets the displayed surface to current, and <ESC> from a not ready surface restores the previous user surface. Under *INFOS, it is not essential to display all pages of a surface. <ESC> may be used as soon as the desired file has been displayed, and the relevant page will remain on screen.

ERRORS

All error messages are in plain english, and, we hope, self explanatory. The general rule we have followed is that user errors are referred to as "BAD" (BAD SYNTAX, BAD NAME, &c.), and system errors are referred to as "ERROR" (SEEK ERROR, CRC ERROR, &c.). A notable departure from this is the message "BAD DISK". This occurs if the disk you have tried to read or write appears not to be formatted to the IBM spec required by the AFDC. The ADOS has been designed to be quite sensitive to dubious disks, and to detect them as far as possible before attempting any user data transfers. If you get a BAD DISK message on a surface you reckon to be valid, try again. If it works the second time, back up the disk IMMEDIATELY, as it could well be worn or partially erased.

Note also that you cannot read or write disks of the wrong pitch. An 80 track (96tpi) disk in a 40 track (48tpi) drive, or vice versa, will be rejected by the ADOS before attempting to read the directory.

We have taken a great deal of care in preparing the ADOS V1.0 and this manual. We don't think you will have any problems, but please report to us if you do. We take pride in our efforts, and want to make them as perfect as possible.

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