

aculab

floppy tape



**Digital Tape Storage System for TRS-80 Level 2.
and Video Genie.**

THE ACULAB FLOPPY TAPE.

The Aculab Floppy Tape for the TRS-80 And Video Genie is a highly reliable digital storage system that provides many of the advantages of floppy disks for a fraction of the price. The system includes all of the necessary operating software in ROM including an extensive file handling system that is fully interfaced to Level 2 BASIC, and an automatic debounce routine for the Level 2 keyboard.

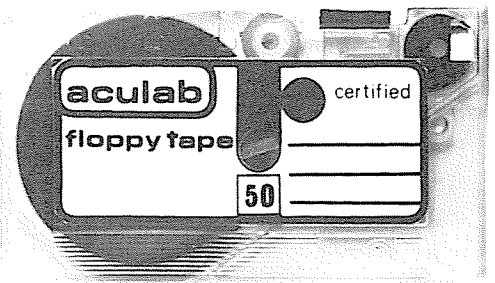
HARDWARE DESCRIPTION.

The Aculab Floppy Tape Master Drive connects directly to the bus connector on the back of the computer (a 40-pin connector for the TRS-80 version or a 50-pin connector for the Video Genie version) and provides a further connector to daisy-chain up to 7 slave drives. No expansion interface is necessary and the existing cassette system remains fully operational. An extension bus adapter is optionally available to allow the use of printer interfaces. The master drive (which addresses as drive 0) includes a 2K ROM containing the system firmware and the electronics necessary to control all search, reading and writing operations on the tape. Ram memory requirements are satisfied by 'borrowing' just over 1K from the BASIC program area (this is completely transparent to the user). The recording format is single density FM, soft-sectored with parity and checksum error-detection (similar to that used by floppy disks), data rate to and from the tape is about 9 kilobaud which will load the directory and a 4K program in about 7.5 seconds. All clock and data flux transitions are read and written directly onto the tape by the CPU.

THE TAPE.

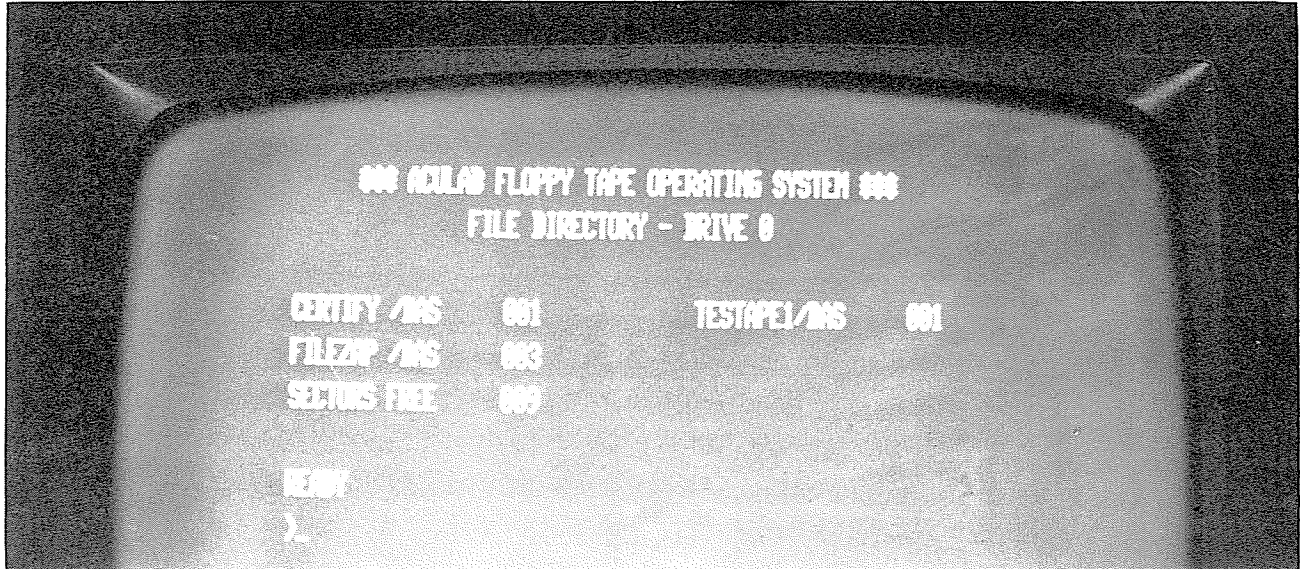
The storage medium is an endless loop of digitally certified tape less than .1 inch wide contained in a cartridge 2.7 x 1.6 x .2 inches. The tape is driven at a single point unidirectionally and only about .5 inch of tape is exposed at any time (the system 'parks' with a length of tape in this gap that is not used for recording data). Whole tapes may be physically write-protected by removing a small reflective sticker from the outside of the cartridge. The tapes come in a variety of lengths, the shorter ones have a faster access time but lower storage capacity. Figures quoted below are typical values for formatted tapes, exact times and capacities may vary from tape to tape, (capacities stated are available for use by a single file or shared between up to 32 files).

LENGTH	TYPICAL CAPACITY	CYCLE TIME
5 feet	3.5 K (14 sectors)	7 secs.
10 feet	8 K (32 sectors)	15 secs.
20 feet	16 K (64 sectors)	30 secs.
30 feet	25 K (100 sectors)	45 secs.
50 feet	45 K (180 sectors)	75 secs.
75 feet	63 K (252 sectors)	110 secs.



INITIALISATION.

After powering up the computer in the normal way and answering the MEMORY SIZE prompt, the Floppy Tape Operating System is activated by typing SYSTEM <enter> then /12345 <enter>. The screen will clear and the system sign-on message will appear. All file handling commands are now available and the keyboard debounce routine is operational.



THE DIRECTORY AND FILE HANDLING.

It is for the file handling capabilities that the floppy disk is so widely used and it is file handling that gives the Aculab Floppy Tape its power and cause it to be more than just a high-speed cassette. The facility of file handling is built up around the directory which is a list of names and pointers that is created in memory and then written onto the tape. Whenever a program or data is saved the user must provide a name which is then entered into the directory in memory. The appropriate number of free sectors are then allocated to the file (these sectors may not necessarily be in one continuous block depending upon the distribution of unused sectors at the time), the file is then written to the tape followed by the amended directory. The directory itself will contain up to 32 filenames and will control up to 252 sectors on each tape (63K). Filenames are strings of the form -: "FILENAME/EXT:d" where "d" is the drive number (0-7), if :d is omitted then the default value of :0 is assumed. The Floppy Tape Operating System has an internal mechanism for trapping errors and causing re-tries in the event of 'soft' errors. These are read errors caused by electrical noise, temporary contamination of the read head and similar effects that may prevent proper recovery of data first time round. The event is recognised by the system by the occurrence of parity or checksum errors or difficulty in locating a sector header. Depending upon the exact type of error the system attempts a number of re-tries before giving up and reporting the error to BASIC by returning an FD ERROR (bad file data) which in turn may be apprehended by the users program with ON ERROR GOTO procedures. In addition to the the system will return messages to BASIC that relate to file-handling operations ie.- tape write protected, drive not present, file not in directory, directory full, tape full, no file to save, End-Of-File encountered, load file format error or insufficient memory.

THE COMMANDS.

@NEW ":d"

This command will erase and format a tape and create a blank directory on the tape ready for use. (In all of the following commands the ":d" is not required if the command refers to drive 0, the first drive).

@LIST ":d"

This command will display the file directory from the tape on the video display. The size of each file (in 256-byte sectors) is shown along with the number of free sectors remaining on the tape.

@SAVE "FILENAME/EXT:d"

This will save the BASIC program currently in memory under the filename "FILENAME/EXT".

@SAVE "FILENAME/EXT:d", (sectors), (start address)

This will save (sectors)*256 bytes of memory starting at decimal address (start address), this file may be subsequently @LOADED.

@SAVE "FILENAME/EXT:d", (sectors), (start address), (entry address)

This is similar to the previous example except the program may be either @LOADED or @RUN directly off tape.

@LOAD "FILENAME/EXT:d"

If this file was saved as a BASIC program then it will be loaded into BASIC and the variable pointers set up to acknowledge its presence then control returned to BASIC. If the file was saved as a machine language file then it will be loaded into memory as such and control returned to BASIC.

@RUN "FILENAME/EXT:d"

This command will load and run either a BASIC program or a machine language program directly off of the tape.

@MERGE "FILENAME/EXT:d"

This command will load the BASIC program named "FILENAME/EXT" after any text already in memory without erasing it so that the second program appears continuous with the first.

@KILL "FILENAME/EXT:d"

Will remove file "FILENAME/EXT" from the directory and reallocate the sectors previously assigned to that file for re-use.

@PUT "FILENAME/EXT:d", (record no.)

This command will cause the data in the 256 byte data buffer to be written into sector no. (record no.) of file "FILENAME/EXT". If the file does not already exist then it is created and sectors are allocated to the file. If the file does exist but is not large enough then extra sectors are allocated (assuming that they are available on the tape).

@GET "FILENAME/EXT:d", (record no.)

This command will cause the data in sector no. (record no.) in file "FILENAME/EXT" to be brought into the data buffer for access by BASIC.

Any of the operating system commands may be used either as direct commands entered from the keyboard or from within programs. Particularly useful is the capacity for one program to @LOAD and @RUN another -this allows programs to be 'chained'. In the case of keyboard input a series of commands may be set up, each separated by colons in the normal way, for sequential operation by the computer. Eg.-:

@NEW:@LIST:@SAVE"FILENAME/EXT":@LIST

This will firstly format the tape then display the directory, then save the program currently in memory under the filename "FILENAME/EXT" then list the directory again.

ACULAB FLOPPY TAPE - PRICE LIST MARCH 1981

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FLOPPY TAPE MASTER DRIVES (Includes manual, 240V psu and 10 tapes).

TRS-80 version	£169-00 ea.
Video Genie Version	£174-00 ea.

ACULAB FLOPPY TAPE SLAVE DRIVES (any type). £125-00 ea.

BUS EXTENDERS (allows 2 connections to expansion bus).

TRS-80 (40-way)	£ 12-00 ea.
Video Genie (50-way)	£ 13-00 ea.

TAPES (5 tapes minimum order) any length. £ 1-75 ea.

Please add £2-00 post and packing per drive, £0-50 on tapes and then VAT at the current rate.

Make cheques and postal orders payable to Aculab Ltd., and address as below. Allow 14 days for delivery.

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With Compliments

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