

SWITCH ON AND GO

Bruce Smith looks at one of the latest releases for the Electron, the AP4 disc interface from Advanced Computer Products

One company which has been giving a great deal of support to Electron owners over the past 12 months has released what could be its best product to date, the Advanced Plus 4 - a disc interface for £80.44.

The AP4 from Advanced Computer Products requires that you have a Plus 1 fitted to your Electron and a suitable disc drive to plug into it (see the round-up on page 148). Once installed in either of the expansion unit's cartridge slots. The disc drive is plugged into the port at the back of the AP4 and that's it - just switch on and go.

The heart of the AP4 is the 1770 disc

Program function	AP4	EFS
Save 20k mode 2 screen	4.7	5.3
Load 20k mode 2 screen	4.3	3.3
BPUT 1000 bytes	4.1	4.2
BGET 1000 bytes	3.5	3.2
PRINT 1000 strings	20	31.2
INPÜT 1000 strings	14	19

Table 1. Speed tests

controller chip, which is the same as that used on the BBC B+ and Master series. PAGE remains at &E00, ie, the same as for a tape-based system which means that most tape-based software can still be run.

The Disc Filing System (DFS) ROM is ACP's own Advanced Electron DFS (AED), which is installed in one of two ROM sockets on the AP4. The other ROM socket is free to take a further sideways ROM - it could be the Advanced DFS (ADFS), available from ACP soon. Removing the lid also reveals the 1770 disc controller chip, 8k of RAM for use by the AP4 and a well-designed and produced circuit board.

The AED provides all the standard DFS commands as well as a few extra ones including disc FORMAT and VERIFY. Also included are a few Master-type commands such as *DRIVE and *ROMS. The former allows you to read a 40-track disc on an 80-track drive,



The great thing about a disc interface like this is its ability to run Beeb disc-based software

while the latter displays a list of ROMs installed in your Electron.

The great thing about a disc interface like this used with a 5.25in disc drive is its ability to run 'standard' BBC micro disc-based software. In fact, as long as software does not take account of BBC micro hardware (such as Teletext and graphics chips), it should load and run with few problems.

The other point of note was its speed. While not comparable to a standard Beeb disc interface, it's certainly more than adequate and quiet in operation. Table 1 lists some timing results for a few programs I wrote to access the disc surface. Compared to its major rival, the Solidisk EFS, it comes out on top in four out of six tests. The timings, I should point out, were all taken with David Acton's stop-watch! Using the TIME function is not allowed, because to gain speed both systems seem to turn it off - or at least slow it down when performing any disc accesses. The AP4 works hard when in high resolution modes - to increase speed the Solidisk EFS turns the screen off so it doesn't have to waste time refreshing the display. The AC4 tries hard to do both, but results in bad screen interference. A useful 60-page manual is supplied which is both explicit and easy to read. If I was to find

fault, it would only be because the manual does not go into disc theory or care, and for first time disc interfacers this could be a problem.

The AP4 is a very good product: table 2 shows that it scores more points than the EFS. Remember that the EFS does come with 16k of sideways RAM and includes a Winchester port which means that you can plug in a hard disc. However, for those of you looking for a disc

Aspect	AP4	EFS
Design	4	2
DFS	4	3
Compatibility	4	3
Manual	5	3
Ease of use	5	5
Extras	4	4
Total	26	20

Table 2. AP4 compared to EFS (marks out of five)

upgrade for the Electron, the AP4 scores best - though at around £80 it is more expensive than I would have liked. In my opinion, the AP4 should be considered as the standard interface for the Electron.

Advanced Plus 4 £80.44. Advanced Computer Products, 6 Ava House, High Street, Chobham, Surrey GU24 8LZ. Tel: (0276) 76545

Product: Plus Four Disc Interface

Price: £69.55 plus VAT

Supplier: Advanced

Computer Products, 6
Ave House, High Street,
Chobham, Surrey GU24
8LZ. Tel: 0276 76545

PLUS 4, from Advanced Computer Products, is yet another disc system for the Electron. There are already three, the Plus 3 from Acorn, Cumana's interface and Solidisk's, so why bring out another?

Well, each has its own advantages and disadvantages. Each works in a different way and one are compatible with each other.

This means, for instance, that if you have one disc system you can't swap discs with a friend who has a different system — without a lot of hassle, that is.

ACP's offering is an Acorn cream coloured interface that plugs into one of the Plus 1's ROM cartridge sockets.

It's the same height and depth as an ordinary cartridge but about twice the width, making it quite a neat unit since most of it disappears into the cartridge slot.

This is more important than you might think because unfortunately once you start to expand your Electron you'll find it can take up quite a large amount of desk space.

Believe me, that old joke about the Electron becoming so big that it's falling off the back of the table is true.

At the rear of the Plus 4 is a standard socket to take a disc drive, identical to the one on a BBC Micro.

You can use 40 or 80 track 3½ or 5¼in drives, double or single sided, provided they have their own power supply, so there is plenty of choice.

On opening up the Plus 4 you'll find four sockets, three are filled and one empty.

A WD 1770 disc controller

is fitted in the first. It's quite popular since it is relatively cheap and can be used in single or double density mode, which crams more on a disc.

This is the same as used in the Plus 3, BBC B+ and the new Master series.

Next comes a standard ROM socket. ACP will tell you it's for ADT, their Advanced Disc Toolkit ROM, but it can be used with any available Electron ROMs.

The third socket is fitted with ACP's 1770 DFS. This is virtually identical to the DFS used in the BBC B+ and Master and is designed to be as compatible as possible with the old Intel 8271 disc controller and DFS used in the ordinary BBC Micro.

This means that the disc controller is restricted to single density mode and the DFS restricts the number of files on a disc to 31. Directory names are single character only and filenames are up to seven characters.

The advantage of this compatibility is that it is possible to save a program to disc on your Electron, put the

disc into a drive connected to a BBC Micro and load it straight in, and vice versa.

The discs used are identical so there's no problems with swapping unprotected software.

You'll find a full review of ACP's 1770 DFS in the February 1986 issue of *Electron User*.

The last socket in the Plus 4 is fitted with a 6264 8k static RAM chip. This is used exclusively by the DFS and isn't an addition to the ordinary RAM available to Basic.

Although it doesn't provide you with any extra memory the important advantage of this system is that you don't lose any.

All disc filing systems require some workspace in which to operate. For instance, the ADFS in the Plus 3 requires about 4k which is grabbed from the free memory available to Basic.

This can pose a problem when running programs in Modes 0, 1 and 2 as it is all too easy to run out of memory.

With ACP's Plus 4 fitted

PAGE stays fixed at &E00 so you've got exactly the same free memory as before. Those long programs that ran from tape will run from disc without any modification and without the need for downloaders.

An added bonus is that if you can beg, steal or borrow the ADFS ROM out of a Plus 3 then you've got both ADFS and DFS, enabling you to access both Electron Plus 3 discs and BBC discs.

PAGE is set to &1D00 by the ADFS, but you can reset it to &E00 and use the DFS instead.

The Plus 4 has been in use in the office for some time and has performed perfectly. I can't fault it.

VERDICT: Weighing up the advantages and disadvantages of all four disc systems currently available for the Electron, I think ACP's Plus 4 comes out on top. I can recommend it to anyone contemplating upgrading to disc.

Disc drive compatibility at long last

ROLAND WADDILOVE
reviews the Plus 4 from ACP