Support Group Application Note
Number: 049
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Author:

Master 512: Applications Compatibility and Software List

Applicable Hardware : BBC Master 512

Related Application Notes:

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INTRODUCTION

The operating system supplied with the Master 512 is DOS Plus by Digital Research. This application note explains the main features available to the user and the applications programmer, and the main caused of any incompatibility of applications on the Master 512. It also provides a list of tested packages which have been found to work an other useful information such as contacts.

MEMORY SIZE

PC Dos 1.2 takes only about 64k of space from the user when running on an IBM PC. Dos+ takes about 154k of space away from the user when running on a Master 512. Hence the usable space on a Master 512 is about 90k less than the usable space on a 512k IBM PC. Packages specifying 512k or 640k may therefore have problems with memory limitations. The version of GEM on the Master may also limit the use of some applications, as the desktop takes away a further 333k. This means that packages such as GEMWrite will only have about 25k free for text files. this can be overcome with a memory expansion board such as the Solidisk PC+.

SYSTEM CALLS

Dos+ 1.2 is system call compatible with PC-DOS 2.1 and MS-DOS 2.1. This means that if a programmer looks at the documentation for PC-DOS 2.1 (for instance) then all of the system call documented therein are available to the programmer when running under Dos+ and will behave as described in the documentation. Dos+ is designed to be compatible with MS-DOS 2.1 and CP/M(86). Compatibility is achieved at three levels, these are:

1. User Commands
2. Operating System Calls
3. The ROM BIOS(ROS) function calls

An application program which interacts with the rest of the world only via the official system calls of MS-DOS 2.1 will run correctly on the Master 512. MS-DOS 2.1 applications frequently use other methods of communicating with the rest of the system, these are explained din subsequent sections.

Some of the latest GEM packages expect the latest version of GEM, and they make use of the new calls it provides. This version of GEM has not been ported to the Master. These packages may, therefore, not run correctly under the Master version of GEM.

It is possible to load the MS-DOS 2.1 COMMAND.COM file or reload the Dos+ COMMAND.COM file under the Master Dos+. This does take more memory but improves compatibility with certain packages, such as Turbo Pascal 4.0 which works correctly with a second COMMAND.COM file loaded. This may be worth trying if your application loads but does not run correctly. To re-load COMMAND.COM just type COMMAND <return> at the A> prompt.

DIRECT HARDWARE ACCESS

Some applications written for the PC exhibit this behaviour and will read or write directly to registers known to be accessible on the PC. With the exception of the colour graphics adapter's screen memory, the Master 512 cannot intercept any of these accesses and in many cases this can prevent an application from running, or running properly. Hardware affected includes:

The video controller

There is a video controller chip on the board of the IBM PC (usually the 6834 as used in the Master), which some applications write to directly. The most common reason for this is to change the appearance of the cursor or to change the display mode. Neither of these cases are catastrophic. In the case of changing the cursor it will simply remain unchanged and the on screen appearance will not be as the application write intended. The case of accessing the video controller to change the display mode is rare because there is a legal ROS function to do this. If it does happen however, it is usually done at the start of a program and the user must determine the mode which the application is trying to change to (by trial and error probably) and set the system up for this screen mode before starting up the application. The screen mode can be changed using the PCscreen utility supplied on the DOS boot disc.

The timers

There are a number of timer on the IBM PC board and some applications make use of these. The effect of not having these timers on the Master 512 really depends on what the applications was trying to do.. In some cases the application might go into an infinite loop, in other cases it might simply return the wrong results for timings.

Function keys

The function keys on the Master 128 keyboard are predefined from within Dos+ and cannot be redefined using a KEYBUK.EXE file as on the PC. They can however, be redefined to the IBM settings by typing 'COMMAND' after loading Dos+. The Master settings can be recovered by pressing CTRL+C. Their settings are:

Key	**M512 Setting**	**IBM setting**
f0	GEM <cr>	
f1	HELP <cr>	copies 1 char from source line to command line
f2	SDIR	copies all chars up to specified char from src line to command line.
f3	SHOW	copies all remaining chars in source line to command line
f4	SET	skips over chars in source line up to specified char
f5	COPY	copies command line as new source line, but does not execute it
f6	REN	
f7	DEL	
f8	TYPE	
f9	CD\	

VDU codes

The IBM PC uses a particular sub-set of the ANSI standard, with a few extensions of its own. Our Dos+ supports most of the ANSI codes that the IBM uses. It doesn't support some things such as being able to reprogram the keyboard (this is an IBM extension and not part of the ANSI standard). We are also unable to support all of the colours available with a CGA graphics card, as the mode 0 used in the Master is only a 2 colour mode.

There was a problem with the ANSI codes on the first release of Dos+. They were quite happy when legal values were given, but did strange things when illegal values were given. This has been corrected in the release 2 and 3 or Dos+. The main ANSI codes we support are:

VDU code	**Effect**
Esc A or Esc [nA	Cursor up
Esc B or Esc [nB	Cursor down
Esc C or Esc [nC	Cursor right
Esc D or Esc [nD	Cursor left
Esc E or Esc [2J	Clear screen
Esc e	Cursor on
Esc f	Cursor off
Esc [n;nF	Cursor position (column/row)
Esc [n;nH	Cursor position (row/column)
Esc [K	Erase to end of line
Esc p	Inverse video
Esc q	Normal video
Esc [r	Restore cursor position
Esc [s	Save cursor position
Esc [=nh	Set IBM screen mode

KEY: Where 'n' appears you should substitute an ASCII value. Esc means the escape character, usually ASCII 27. An example to move the cursor down 12 lines in Microsoft BASIC is:

```
PRINT CHR$(27);"[12B";
```

UNDOCUMENTED SYSTEM CALLS

A few MS-DOS applications make undocumented calls to the operating system. This sort of behaviour is fairly rare, but does include some Microsoft packages. Since the behaviour of these calls is undocumented, they cannot be and are not supported on the Master 512 under Dos+. Some new packages also make use of new calls in MS-DOS 3.2/3.3 which are no present in MS-DOS 2.1 and therefore no present in Dos+. Packages using these calls may therefore run incorrectly.

OPEN FILES

Dos+ 1.2 has a limit of 20 files open at one time, this is extended on 2.1. Any applications that require more than the allowed number of files open at one time may not work correctly. The MS=DOS CONFIG.SYS and ANSI.SYS files are also not recognised by Dos+ as they have no effect on the default settings for files, buffers etc.

Sound

There are no legal methods of producing anything more complicated than a standard bell (control G) sound on the IBM PC without accessing the hardware directly. A program which attempts to produce complex sounds will simply run silently on the Master 512. There is a sample program on disc four, called SIREN. This is a machine code program written using MASM, which demonstrates how you can produce sound from within programs running on the 512, using the calls to the Master 128 MOS provided on the Master 512.

The disc controller

This can cause the most severe problems, as the Master uses a 1770 disc controller rather than the NEC disc controller. Some of the more sophisticated disc protection mechanisms access the disc controller directly to perform their protection. The type of protection which caused this problem is called key disc protection whereby the user is required to always have the original master disc inserted in floppy drive A (even when running the package off a hard disc). If an application uses a protection mechanism which accesses the disc controller directly then it will not run on a Master 512, as the disc controller in the Master is the WD 1772 and not the NEC used in the PC. The situation is not as bad as it might seem:

Not all protection mechanisms (even keydisc protection) work by accessing the disc controller directly, some work legally through the operating system.

Some vendors of copy protected packages will supply a non copy protected disc once the use has purchased the normal copy protected product.

There is some move away from copy protection in the market place, as most users are now moving to hard discs where keydisc protection can cause problems.

KEYBOARD EMULATION

The PC Keyboard driver returns a more complex value than just a single byte to represent the key pressed. The Master 512 keyboard driver is designed to return the same values as the PC when any given key or combination of keys are pressed hence to an application program the keyboard will look identical to that of a PC. The only limitations are that holding down the copy key and typing the ASCII value of the key on the numeric pad will not work before Dos+ version 2.1. The major problem is with those packages that directly access the keyboard driver to read certain keys. On Dos+ 1.2 the ALT key does not work correctly with a number of packages, however Dos+ 2.1 has been modified to deal with this type of behaviour as far as possible. As it i not possible to redefine any of the keys, Dos+ will ignore a KEYBUK.EXE file.

IBM keys emulated using the numeric keypad

These keys are available for use on the Master 128 by using the numeric keypad. None except for ALT are available for people using a BBC B or B+ machine with a universal second processor adaptor, as the B and B+ do not have the numeric keypad, and the keys provided on the Master numeric keypad cannot be redefined as standard, however it is possible to write a program that will allow the use of the number keys in conjunction with the shift lock key to emulate the keypad. this utility is available on the dos+ user group disc, and with the Dabhand reference manual. As standard you may have problems when running packages such as Framework II which make use of these keys. They are as follows:

IBM keyboard	Equivalent Master 128 key
ALT	COPY
Rubout	Delete on main keyboard
End	1 on num pad
Down arrow	2 on num pad
Page down	3 on num pad
Left arrow	4 on num pad
Right arrow	6 on num pad
Home	7 on num pad
Up arrow	8 on num pad
Page up	9 on num pad
INS	0 on num pad
Scroll lock	# on num pad

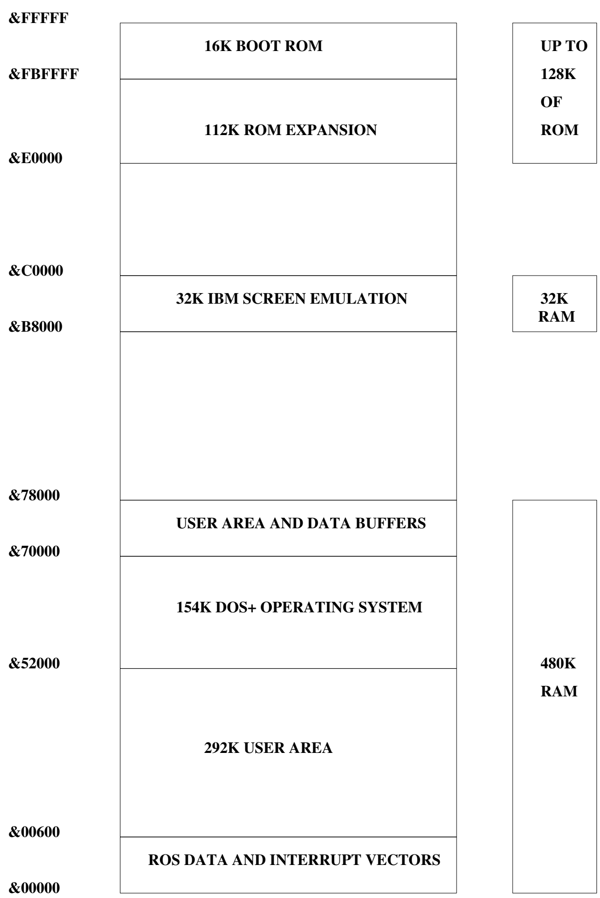
Break	# on num pad
PrtSc	* on num pad
Num lock	/ on num pad
Del	Delete on num pad

Although these keys are provided and return the same value as their PC equivalents, this does not imply that the same function will be performed. What is done with the returned value is up to the application. For instance, pressing the PrtSc key at command level on a PC initiates a screen dump. Although pressing * on the Master num pad will generate the same character code,it will not initiate a screen dump because this is not supported by Dos+.

SCREEN EMULATION

The ROS routines for reading and writing PC screen memory are very slow on the IBM PC and so most high performance applications resort to accessing the screen memory directly. The Master 512 system software provides emulation for the IBM CGA (colour graphics adapter). It cannot emulate EGA (enhanced graphics adapter) or Hercules as these are beyond the hardware capability of this machine. CGA is emulated in the following way:

Applications are allowed to read or write to memory between addresses hex B8000 and hex BBFFF, this is where they would expect to find the screen memory on an IBM PC with a CGA adapter. Every 100 milliseconds a special interrupt task is activated which examines the screen and by comparing it with a copy made the last time that the interrupt task was invoked, checks to see if any changes have been made. If any bytes have been changed then the interrupt program calculates which pixels have been altered and passes the information across the tube, mapping them into a 20k mode 0 screen for display.



This is only a general memory map. If you have the Solidisk PC+, then the memory map changes, as Dos+ relocates itself higher up in the memory map, to give a large contiguous block of user memory.

The screen emulation works very well for graphics modes, there can however be a slight problem with character modes. On the PC it is possible to display 40x25 or 80x25 characters in 16 colours. These screens are emulated using the Master 128 mode 0, so only two colours are available. The result is that certain packages such as the Sage range, which make use of the colours to display menus etc will not look the same as on the IBM. The screen emulation caters for those applications which access the screen directly, so these programs will not fail to work on the Master because of this. Applications should therefore be set up to use a CGA adapter, and where possible a mono monitor as well.

MEDIA COMPATIBILITY

The disc drivers in Dos+ will recognise discs in a number of different formats and will automatically detect the format size of a PC disc. This means that it is possible to have different format discs in the top and bottom drives. The main format used by the Master 512 is the 800k format so this is checked for first. the Dos then works its way down the list until it has checked all the formats available. If the disc is not recognised an error message will be generated. The only problem occurs with formatting the IBM 360k format discs. Because of the speed difference between PC drives and some drives used on the Master the inter sector gap may be too small for the disc to be read on a PC, if it was formatted on the the Master. However, if you format the disc on the PC you should be able to use it with both the PC and the Master.

DOS disc formats supported:

TYPE	SIZE	BYTESxSECTORSxTRACKS			EQUV. BBC FORMAT
Acorn DOS format	800k	1024	x5	x160	800k ADFS
Tandy DOS format	720k	512	x9	x160	N/A
Olivetti DOS format	720k	512	x9	x160	
IBM DOS format	720k	512	x9	x160	
Nimbus DOS format	720k	512	x9	x160	
Altos CP/M format	720k	512	x9	x160	
Acorn bootable DOS	640k	256	x16	x160	640k ADFS
Acorn Z80 CP/M format	400k	256	x10	x160	400k DFS
IBM DOS format	360k	512	x9	x80	
IBM CP/M format	320k	512	x8	x80	

Dabs Press produce a utility disc for the Master 512 containing a disc editor that will work on all of the formats supported.

IBM ROM BIOS CALLS

The rom on the IBM PC contains some documented entry points which can be called from application programs. Many of these so called ROS functions are supported on the Master 512 in the XIOS and are essential to support application programs that have been written specifically for the IBM machines. The ROS entry points are used by some applications for low level control of various pieces of IBM hardware, for example: reading and writing the screen, keyboard control, disc control.

There are some cases where it is not possible to fully support the functionality of certain ROS calls. For example the call relating to the control of the serial interfaces on a PC make certain assumptions about the underlying hardware, (eg that the hardware can provide a carrier detect signal, such a signal is not available on the Master hardware). As a general rule however, the vast majority of ROS functions are supported and it is only applications which attempt complicated use of the serial lines which will fail here. this includes most comms packages.

MOUSE DRIVERS

Those programs that will run from the GEM desktop will be able to use the supplied mouse, however those programs that are able to use the MS mouse will not be able to use the supplied mouse. This is because there is no Microsoft compatible mouse driver supplied. The Microsoft Mouse does not work correctly with the Master due to hardware and software limitations. The MOUSE.COM file that is supplied with a number of packages will therefore not be recognised by Dos+. The source of the mouse driver is available to anyone who wants to write their own driver. There will also be a mouse driver with the Dabhand reference guide.

DOS+ ERRORS

With some packages or parts of packages you may get errors such as "Cannot Load Program", "Illegal Opcode", "Invalid Opcode error" or "Undefined Opcode". Usually, this means that this package or part of package will not work under Dos+, as it is accessing something directly or using unsupported calls, alternatively it may be too large. The list of registers that are usually displayed after such an error is generated are just there as a debugging aid, and provide no useful information.

MATHS CO-PROCESSOR

On most of the IBM machines and their clones, you have the facility to add a maths co-processor, which makes floating point operations much faster. Although the bus for a co-processor is supported on the 8086, 80286 and 80386, it is not supported on the 80186. As a result you cannot use a maths co-processor with the 80186. This will only mean that packages such as Turbo Pascal, which can make use of a floating point processor such as the 8087 or 80387, will not be able to be used to their full potential on the Master 512.

MS-DOS

The hardware that is used for the Master 512 has been designed to offer a high level of compatibility with the hardware used in a PC. However there are a number of hardware restrictions. If MS-DOS had been used in place of DOS+ it would not have been any more compatible. This is because the restrictions are not due to the operating system, but due to the emulation of the PC environment. To use Dos+ properly (or even MS-DOS) on the Master 512 would require additional hardware which would have made the co-processor very expensive and unviable as a product. This hardware could have been emulated in software, but the overhead would have made the Master 512 slower than an original IBM PC. It was therefore decided to use Dos+ and produce a board that was very good value for money.

Dos+ 2.1 will be the last operating system version that Acorn will be offering on the Master 512 but this does not mean that third parties will not be offering other operating systems.

DOS PLUS DIFFERENCES

The second release of Dos+ 1.2 has most of the bugs in the first version fixed, it also had a new version of GEM which uses 16k less memory. The following utilities have also been updated:

GETFILE and PUTFILE now work with ADFS, ANFS and DFS.
HDISK gives more partition sizes for the hard disc.

Four new commands have been added, these are:

Label - allows you to title Dos+ format discs
SKS - this allows Sidekick and other memory resident programs to run under Dos+
Edbin - this is a binary file editor and is documented separately
Move - this allows the transfer of files from any filing system to any other filing system. This command is far more flexible than Getfile and Putfile. Again it is documented separately.

A large number of the other utilities have been updated.

The third issue of Dos+ is Dos 2.1. This is a new version, which has a number of additional upgrades as well as all the known bugs fixed. Dos+ 2.1 can use installable device drivers, as long as the FIDDLOAD.COM file is on the disc.

To activate the Sidekick loader, you just type 'sks' with the boot disc in the driver before you load Sidekick. LABEL is used in the form LABEL [name of disc], where the name of disc is the title you wish to have on that disc. The title can be changed as often as you like, but you must have the boot disc or a disc containing the Label utility to use this command.

You can now also use SHIFT+ALT+ASCII number to produce characters, although it will not display characters above 127. Dos+ 2.1 also allows more open files at one time.

If you have been using the Microsoft Flight Simulator under Dos+ 1.2, and have upgraded to Dos+ 2.1 you will find that the Flight Simulator no longer works. This is due to a modification that was necessary on Dos+ to allow the use of memory expansion boards.

IMPORTANT

It would appear that a number of software packages are now being updated either just to improve them or to take advantage of new facilities offered by the latest PC clones and MS -DOS 3.2/3.3. Some of these new versions use calls, or facilities not used by the older versions. In some cases packages which worked correctly on the Master 512 and which appear on the following list, will not work correctly in their latest version. Please make sure that you test a package before you buy it, or arrange a refund option if that package has recently been updated. We can accept no responsibility for packages which appear on the following list, but are found not to work on the master 512.

For example:- Versions of Sidekick prior to and including 1.50 work, versions after 1.50 do not work.

USING SERIAL PRINTERS

If you wish to use a serial printer with your Master 512 you need to follow either of the following procedures depending upon which version of DOS+ you have.

Serial Printer with DOS+ 1.2

Boot up DOS+ on your machine. Leave disc 1 (DOS+ BOOT DISC) in drive A, unless you are booting from a Winchester. From the A> (C>) prompt type the following:-

```
device auxout:=null <RETURN>
device lst:=aux0 <RETURN>
device aux0[speed=(tr,rx)] <RETURN>
```

Device is a program on disc 1 (DOS+ BOOT DISC).
tx = transmit speed e.g. 300, 1200, 9600 baud.
rx = receive speed e.g. 300, 1200,9600 baud.

Consult your printer manual to find the baud rate of your printer. If, for example, your printer is running at 1200 baud, then tx and rx will both be set to 1200. If your printer has the option of running at a number of baud rates then set it for the fastest rate it will work at up to 9600 baud.

Serial Printer with DOS+ 2.1

Boot up DOS+ on your machine. Leave disc 1 (DOS+ BOOT DISC) in drive A, unless you are booting from a Winchester. From the A> (C>) prompt type the following:-

```
device auxout:=null <RETURN>
device prn:=aux0[speed=(tx,rx)] <RETURN>
```

Device is a program on disc 1 (DOS+ BOOT DISC).
tx = transmit speed e.g. 300, 1200, 9600 baud.
rx = receive speed e.g. 300, 1200,9600 baud.

Consult your printer manual to find the baud rate of your printer. If, for example, your printer is running at 1200 baud, then tx and rx will both be set to 1200. If your printer has the option of running at a number of baud rates then set it for the fastest rate it will work at up to 9600 baud.

USING ..CMD IN GEM WRITE

..CMD is an inbuilt command in GEM Write that allows you to send special control characters to the printer.

GEM Write can only use the underline, bold and italic styles that most dot matrix and daisy wheel printers support as standard, but most modern dot matrix printers also support a number of other features such as superscript, nth inch line spacing, graphics characters etc. If, for example, you wish to use condensed printing on the Epson FX-80, then you can do this with GEM Write using the ..CMD embedded command. ..CMD is one of a number of embedded commands that GEM Write supports; it allows you to send control codes directly to the printer.

So to get your condensed print, you would send the control codes to turn condensed on and off directly to the printer. For example, with the FX-80 you would put ..CMD<O on the left margin of your text to turn condensed on. Then, after the text you wish to be in condensed print, you put ..CMD<P on the left margin, to turn condensed off. The character '<' is produced by pressing the <ESCAPE> key. You must ensure that there are NO spaces in the command.

The other thing to note is that your printer may be case sensitive, i.e. ..CMD<h will produce a different effect to ..CMD<H. If your printer manual gives the control codes for your printer as ASCII values, i.e. 27,35 or Esc, 65 then you should translate the ASCII value into its character equivalent. For example Esc, 65 would be entered as ..CMD<A. If you put in the number then the ASCII codes of the numbers will be sent to the printer so if you put ..CMD<65 in the text, then 54,53 will be sent to the printer.
This command is very useful, and can be used to send commands to most printers. You will need to consult your printer manual to find the correct codes for the different highlights that your printer supports.

SINGLE LINE FEED IN GEM WRITE

One problem that comes up frequently is getting double spacing between lines of printed text from GEM Write or getting a form feed between pages. This is caused by GEM Write sending a carriage return (CR) and a line feed (LF) to the printer or by GEM Write being set up to send a form feed.The easiest method to overcome this with most printers is to set the 'CR from host' DIP switch to off, so that the printer ignores carriage returns sent from the host computer.

If however the printer does not have such DIP switches, or other packages that are used in the BBC mode require this DIP switch to be on, then you can tell GEM Write not to send carriage returns. This is done as follows:-

Boot DOS+ and GEM as normal, then load GEM Write, but do not load a file.

The following only needs to be done once, the settings will then be saved and used automatically.

Move the pointer to **FILE** on the menu bar and move down to **TO OUTPUT**.
Select **TO OUTPUT**, which will give you a menu box labelled **Create .OUT file**.
Select **Start** on this menu box. This will give you the output screen with another menu box labelled **START OUTPUT**.
Select **Cancel**, which will leave you with the OUTPUT screen.

Move the mouse pointer over **OPTIONS** on the top menu bar, then move down the menu to **Printer** and select this. You should now get a large selection box, labelled **PRINTER OPTIONS**.

Make sure that the options are set up as follows:-

Scale:	Best fit
Initial Form Feed:	NO
Final Form Feed:	NO
Horizontal Justif:	Center
Vertical Justif:	Center
Print in background:	NO

Then select **OK**.

Reselect the **options** menu, but move down to **MAKE DEFAULT** and select this. Your new options will then be saved.

You can now go back into GEM Write by selecting **QUIT** from the bottom of the **FILE** menu.

When you come to print out a letter that you have written or loaded, you should do the following before going to the output stage:-

Move the pointer onto **PAGE** on the top menu bar. Then move down to **FORMAT** and select this. You will get a selection box titled **PAGE FORMAT OUTPUT**. Change the settings so that it is set up as follows:

Document mode:	OFF
Pagination:	OFF
Justification:	OFF
Line Spacing:	1
Page length:	66 lines
Text begins on:	6_
ends on:	60
Left margin:	1_ characters

You may wish to change some of the above, if you do then make sure that Pagination, Document mode and Line spacing are as above.

To use these settings, click on **OK**. You can now print out your text with single line spacing and no final form feed.

VERSIONS OF DOS+ AND GEM AVAILABLE TO DATE.

1.23 (Issue 1)5 BIOS 1.00 Standard with boards under 5000

1.23 (Issue 2)5 BIOS 1.01 Standard with boards above 5000

1.23 (Issue 2a)5 BIOS 1.02 Standard with Solidisk PC+ board

2.13 (Issue 3)5 BIOS 1.03 Only available from Acorn as an upgrade, on return of original discs, and a cheque/po for £15.00

2.13 (Issue 3)5 BIOS 1.03 As above but on 3 1/2" discs is available for £25.00

The charge on the upgrades is to cover post, packing, insurance and licence. We can accept cheque, postal order and Eurocheque. Please make cheques payable to Acorn Computers Ltd and put your address on the back of the cheque.

The address to return your order to is :

CUSTOMER SUPPORT AND SERVICES
FULBOURN ROAD
CHERRY HINTON
CAMBRIDGE
CB1 4JN

BOOKS RELATING TO AND PROVIDING INFORMATION FOR THE MASTER 512.

BOOK TITLE	AUTHOR	PUBLISHER	ISBN NUMBER
DOS+ User Guide		Digital Research	
DOS+ Programmers Reference Manual		Digital Research	
Using DOS+ on the Amstrad PC	S Morris	Glentop	1 85181 063 3
Using GEM on the Amstrad PC	K Lang	Glentop	1 85181 065 X
WP using GEMWrite	M O'Reilly	Glentop	1 85181 067 6
DOS+ Manual for the Amstrad	D. R.	Glentop	1 85181 094 3
Dab Hand Guide to M512	C Snee	Dabs Press	1 870336 14 3
Dab Hand Reference Guide to M512	R Burton	Dabs Press	Recommended
80186 Data Sheet		Intel UK Ltd	
A & B Computing		Argus Publ.	Monthly Mag.
Mastering DOS+	S Williams	Sigma	

EXTRA LEAFLETS AVAILABLE

Master 512 Technical Information
Master 512 Circuit Diagram
Master 512 GEM Mouse Driver Demo - for writing custom mouse drivers
Edbin and Move User Guide

ACORN ADD-ONS

DOS+ Econet, AES39, ` 149.00 - Allows full use of the Master 512 on Econet

Comes as a site licence. The software is loaded onto the fileserver and allows Master 512 users to access the Econet system, with the ability to load and save files, use the network printer, share files and programs, transfer files to and from PC's using Ecolink cards, etc.

THIRD PARTY ADD-ONS

Solidisk PC+ memory upgrade - Upgrades memory from 512k to 1024k

Useful for big applications which require a lot of memory. Fits on top of 80186 co-processor. Issue 2 board well designed and built.

Marconi tracker ball - can be used in place of the mouse
Margolis comm+ - the only comms package to work on the 512
PSD keyboard modification - allows use of the num pad keys on a BBC B or B+

OPEN UNIVERSITY MICROCOMPUTER SPECIFICATION

The Master 512 does NOT meet the Open university specification for a micro computer for the following reasons:

Single disc drive	M512 requires twin disc drive for GEM
CGA Graphics	CGA supported but only 2 colours
Serial Port	Not supported properly
Mouse	Only works under GEM
Lotus 123 V2	Does not work
UCSD Pascal	Does not work (used on M205 and M353)
PC Automator	Un-tested
Framework	All works except delete key

USEFUL CONTACTS

FOR INFORMATION

Dabs Press, 5 Victoria Lane, Whitefield, Manchester, M25 6AL. Tel: 061 766 8423
Glentop Publishers Ltd, Standfast House, Bath Place, Barnet, Herts, EN5 5XE
Watford Electronics, Jessa House, 250 Lower High Street, Watford, WD1 2AN
Digital Research, Oxford House, Oxford Street, Newbury, Berks, RG13 1JB
Intel UK Ltd, Pipers Way, Swindon, Wilts, SN3 1RJ
PSD, 20 Beechwood Rd, Easton-in-Gordano, Avon, BS20 0NA

FOR REPAIRS

RCS, Headway House, Christy Estate, Ivy Rd, Aldershot, Hants, GU12 4TX. Tel: 0252 333575
Gosling Electronics, Hadleigh Rd, Ipswich, IP2 0ER. Tel: 0473 230075

FOR ADD-ONS

Solidisk Technology Ltd, 17 Sweyne Ave, Southend-on-Sea, Essex, SS2 6JQ
Margolis & Co., 105 Founding Ct, Brunswick Centre, Marchmont St, London, WC1N 1AN

USER GROUP'S

The Big Ben DOS+ user group, c/o O.W.R. Van Dijk, Adm. de Ruyterweg 412 hs, 1055 ND Amsterdam, The Netherlands (the Big Ben DOS+ user group is part of the dutch Big Ben Club in the Netherlands)

The Big Ben DOS+ user group are all very interested in the Master 512 and provide good support to their members. They have a very useful utility disc, which contains such things as a Num-Pad emulator for BBC B users. They are worth joining if you are seriously interested in the Master 512.

NOTE: Some of the information in this leaflet has been provided by users of the Master 512, including the Dutch DOS+ user group, which is part of the Dutch Big Ben Club, and certain Acorn dealers. If you have any information that you would like me to add to this leaflet, which would benefit other users, or you have found problems with any of the listed packages; please write to the address on the front, giving as much detail as possible.

SOFTWARE THAT SHOULD WORK ON THE MASTER 512 (ISSUE 10)

TITLE	VER.	SUPPLIER	COMMENT
Ability	1.2	Migent	Except Comms & tutor
Ability Plus		Migent	Except Comms & tutor
Accountant	1.0	Sage	Some colour problems
Accountant Plus	1.0	Sage	Some colour problems
Auto sketch	1.0a	Auto Desk	Keyboard only
Ballyhoo		Infocom	
BBC BASIC 86	1.0	M-Tec	
Beyond Zork	1.0	Infocom	
Book Keeper	1.0	Sage	Some colour problems
Bureaucracy		Infocom	
Cardbox		Business Simulations	
Cardbox Plus		Business Simulations	
Clipper			
Dataease	2.5		
Dbase II	2.43	Ashton Tate	
Dbase III+	1.1	Ashton Tate	
Dbase IV	1.00	Ashton Tate	As far as tested
Deadline		Infocom	
Delta	4.0		
Desktop	1.0	Sage	Some colour problems
Displaywrite II			
Displaywrite III			Needs installing
Draw-it	1.0		
DR C	1.0	Digital Research	
DR Fortran	1.0	Digital Research	
DR Pascal	1.0	Digital Research	
DR Personal BASIC		Digital Research	
DR RASM	1.0	Digital Research	
Easyflow			
Easywriter			
Enable			
Enchanter		Infocom	
Eureka	1.0	Borland	
Exchange	1.0	Psion	Needs installing on a PC first
Executive Filer	1.0		
Executive Speller	1.0		
Executive Writer	1.0		
Filing assistant			
Financial Control	1.0	Sage	Some colour problems
Flight Simulator	2.12	Microsoft	Not 2.13
Fontasy	1.0		
Framework II	1.0	Ashton Tate	Except scroll lock
Freelance			
GEM Desktop		Digital Research	Supplied
GEM Diary	1.0	Digital Research	
GEM Draw	1.0	Digital Research	
GEM Graph	1.0	Digital Research	
GEM Paint		Digital Research	Supplied
GEM Wordchart	1.0	Digital Research	

GEM Wordcraft	1.0	Digital Research	
GEM Write	1.0	Digital Research	Supplied
GW BASIC	1.0	Olivetti	
HAL			
Hitch Hikers Guide		Infocom	
IBM Assistant			
Infidel		Infocom	
Integrated 7			
ITT XBASIC			
Javlin			
Javlin Plus			
Kedit			
Lattice C	1.0		
Leather Goddesses		Infocom	
Lets C			
Level 2 Cobol	2.1		
Logistix	1.0	Grafox	
Lotus 123	1.0a	Lotus	Not 2.0. Latest version works
Microsoft BASIC	2.0	Microsoft	
Microsoft C		Microsoft	
Microsoft Cobol	2.1	Microsoft	
Microsoft Fortran		Microsoft	
Microsoft MASM		Microsoft	
Microsoft Pascal		Microsoft	
Microtext			
MS-Chart	3.0	Microsoft	
Multimate	3.2		Except DEL key
Multiplan	2.02		
New Word 3	3.01	New Star	Files limited on DOS+ 1.2
Norton Commander	1.00	Peter Norton	
Norton Utilities Adv.		Peter Norton	
Paradox	2.0	Borland	Except personal programmer
PC Boss	2.06		
Payroll	1.0	Sage	Some colour problems
PC Calc			
PC File			
PC Four	1.0	Psion	
PC Outline	1.08		
PC Paint	4.0		
PC Paintbrush			
PC Planner	1.0	Sage	Some colour problems
PC Prolog			
PC Promise	1.12		
PC Smart			
PC Storyboard	1.11		Except camera
PC Talk			
PC Tools			
PC Write	2.7		
PC Write	1.0	Sage	Some Colour Problems
Pegasus Accounts		Pegasus	
Perfect Calc			

Perfect Filer			
Personal BASIC			
Personal Editor	1.0		
Planetfall		Infocom	
Power 'C'		MIX	Requires DOS+2.1 Reload COMMAND.COM first
Printmaster			
Quest			
Reflex			
Retrieve	1.0	Sage	Some colour problems
Rogue			
Sidekick	1.2	Borland	Requires DOS+ 2.1 Not versions above 1.50
Slidewriter+			
Smartwork			
Sorcerer		Infocom	
Stationfall		Infocom	
Storyboard			
Supercalc II		Computer Associates	
Supercalc III	2.1	Computer Associates	
Supercalc IV	1.0	Computer Associates	
Suspect		Infocom	
Suspended		Infocom	
Turbo C	1.0	Borland	Need to write your own Floating point routines
Turbo CAD	1.0	Borland	
Turbo Editor	3.0	Borland	
Turbo Graphics		Borland	
Turbo Pascal	3.0	Borland	
Turbo Pascal	4.0	Borland	Requires DOS+2.1. Reload COMMAND.COM first
Turbo Reflex		Borland	
Twin	1.3		
Ventura Publisher	1.0		Needs DOS+ 2.1 and PC+
Volkswriter 3	1.0	Lifetree	
Volkswriter Deluxe		Lifetree	
VP Planner	1.0		Requires loader
VU Writer			
VU Writer Scientific			
Wishbringer		Infocom	
Word perfect	4.2		Not version 4.0 or 4.1
Wordstar	3.x	Micro Pro	
Wordstar Prof.	4.0	Micro Pro	Requires DOS+ 2.1
Zorland C			Problems with ZC
Zork I/II/III		Infocom	

an IBM clone so no responsibility can be taken for any applications which do not work in accordance with their published instructions. The information given in this note is intended to provide a guide to applications that will work on the Master 512. These applications work as far as tested, but these are not exhaustive tests. It is recommended that an application is tested to your requirements before being used in conjunction with the Master 512, as no responsibility can be taken for applications listed that are found not to work fully when run on the Master 512.