

THE
PLUSDLITE



By Ben Versteeg

BYTEDIELIGHT.COM

USERS'
MANUAL

Based on the 'PlusD' from

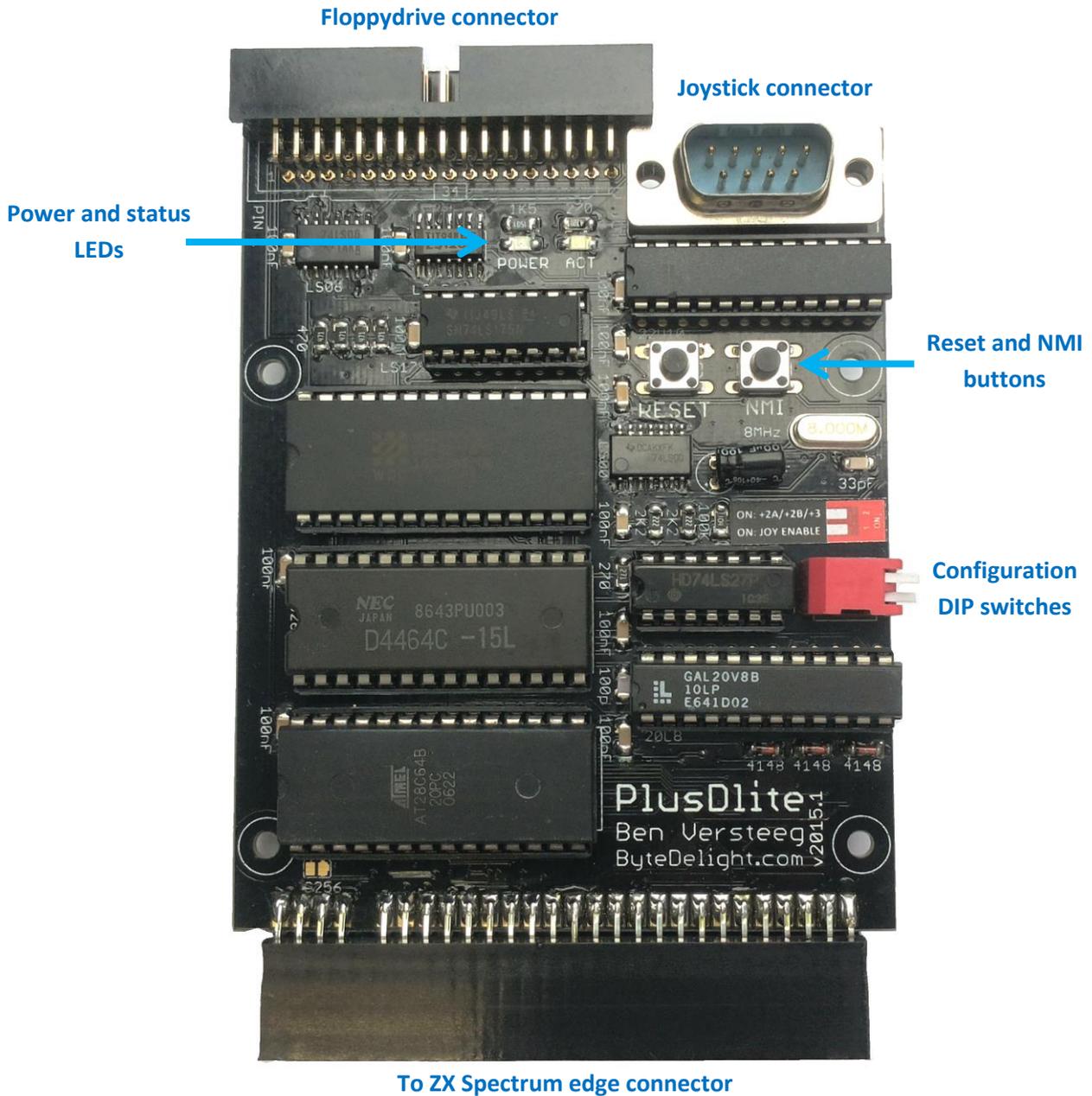
MGT

MILES GORDON TECHNOLOGY

The PlusDlite^{v2015.1}



Floppydisc and joystick Interface for the ZX Spectrum
Based on the MGT PLUS D from Miles Gordon Technology



Read this manual before using the PlusDlite interface!

Manufactured by Ben Versteeg

BYTEDELIGHT.COM

Compatibility

The PlusDlite is compatible with the ZX Spectrum 16K, 48K, Plus, 128K, +2, +2A, +2B and +3.
It is also compatible with the Multiface, but not with other (storage) interfaces with their own ROM.

PlusDlite Quick Reference Guide

To reference to a drive, use 'D1' and 'D2' or use 'D*' for the currently selected drive.
Filename wildcards * and ? can be used with SAVE...TO, ERASE, CAT.

RUN	Boots the system
CAT *	Displays catalogue
CAT *!	Displays shortened catalogue
SAVE D*"filename"	Saves file
VERIFY D*"filename"	Confirms save has been made
LOAD D*"filename"	Loads file (except Snapshot files)
LOAD Pn	Loads a program by number, incl. Snapshots
LOAD D*"filename" S	Loads 48K Snapshot file
LOAD D*"filename" K	Loads 128K Snapshot file
LOAD D*"filename"SCREEN\$	Loads screen file
ERASE D*"file" TO "new file"	Renames a file
ERASE D*"filename"	Erases a file
SAVE D1"file" TO D2	Copies a file from drive1 to drive2
MOVE D1"fileA" TO D2"fileB"	Reads file; writes it to 2nd file
FORMAT D1	Formats disc in drive 1
FORMAT D1 TO 2	Formats drive 1; copies from 2 to 1

Advanced commands

LOAD @ D,T,S,Address	Reads a specified sector to memory
SAVE @ D,T,S,Address	Writes to specified sector to disc
CLS #	Clears screen & attributes area
SAVE D*"filename"X,Address	Saves 510 byte Execute file
LOAD D*"filename"X	Executes file in PLUSDLITE RAM

Streams

OPEN #n;D*"filename"IN	Opens an input file on stream n
OPEN #n;D*"filename"OUT	Opens an output file on stream n
MOVE D*"filename" TO #n	Reads file; outputs to stream n
CLEAR #	Clears all open streams & channels
CLOSE #*n	Closes file on stream n
CLOSE #*	Closes all open files

SNAPSHOT BUTTON

- 3 - Screen save
- 4 - 48K Snapshot save
- 5 - 128K Snapshot save
- X - returns to program

Symbols Used in this Manual

The descriptions of the BASIC commands in this manual contain the following placeholders:

- [1/2/*] - one of '1', '2' or '*'; drive 1, 2 or current drive
- [filename] - the user chosen filename

Configuring your PlusDlite

Switch 1 enables or disables the joystick interface.

Switch 2 selects whether or not using a ZX Spectrum +2A, +2B or +3.



Connecting your PlusDlite

WARNING: power off your ZX Spectrum before connecting or disconnecting any peripherals, including the PlusDlite!

Compatible Disc Drives

The PlusDlite will work with any floppy disc drive which is configured as the Shugart standard.

PC floppydrives can be used; please check ByteDelight.com/PlusDlite for more information.

Dual Floppydrive sets are available at ByteDelight.com.

Powering on your system with PlusDlite

Power your floppy disc drives first, and power the ZX Spectrum secondly.

Because of different power supply specifications, there is a chance that the ZX Spectrum with PlusDlite will not boot up correctly the first attempt.

When this happens, power off the ZX Spectrum only, wait for 10 seconds and power it on again.

G+DOS

G+DOS stands for the Gordon Disc Operating System for the PlusDlite.

The G+DOS system is a combination of ROM and system file on disc.

The system file is named '+SYSTEM.CDE'.

The maximum number of files per disc with G+DOS is 80.

Filenames can be up to ten characters long, in upper case or lower case characters, or a mixture.

Booting the G+DOS System

After powering on your ZX Spectrum with PlusDlite, the normal Spectrum title screen will appear, and the LEDs on the PlusDlite and on disc drive 1 will light up.

Insert a floppy disc with the PlusDlite system file in disc drive 1.

Type RUN, then ENTER.

The PlusDlite now searches for the system file on the floppy disc.

During this process the PlusDlite led will temporarily go out (the led always goes out while the PlusDlite is executing a command).

When the System is loaded, the screen will display:

"Miles Gordon Technology G+DOSxx" where 'xx' represents the system file version.

If there is no 'autoload' file on the floppy disc, this message is shown:

O.K. G+DOS, 0:1

You will need to boot the G+DOS system it each time your power up your system.

After the booting process is ready, you can use the PlusDlite commands.

Disc Drive Specifiers

The PlusDlite's BASIC commands are followed by a disc drive Specifier: a code to let the computer know that the instructions are directed toward the disc drive.

The following options are available:

D1 or d1 = a command for drive 1

D2 or d2 = a command for drive 2

D* or d* = a command for the last drive in use

Upper or lower case

By typing an upper case 'D' rather than a lower case 'd' when saving a file, the abbreviated disc catalogue will be displayed automatically when the save is complete or after erasing or renaming a file.

The Catalogue

Normal catalogue

CAT [1/2/*]

Example:

CAT 1

Abbreviated catalogue

CAT [1/2/*]!

Displays an abbreviated catalogue.

This will show the PlusDlite disc catalogue, a list of the files on the disc with various comments and the amount of free space on the disc in kilobytes.

Program numbers

The catalogue shows the program number in the first column on the left; files are not shown in alphabetical order.

Whenever you save a file, the PlusDlite will give it the first available program number. This program number will stay the same until the file is erased.

File size

The catalogue also shows the number of disc sectors used in the third column. Each sector holds 512 bytes (= 1/2 kilobyte), so to find out the number of kilobytes used for each file, divide the number in the third column by 2.

File types

The catalogue shows the file type in the fourth column, one of:

BAS = BASIC Program

CDE = Code File

SNP 48K = 48K Snapshot File

SNP128K = 128K Snapshot File

SCREEN\$ = Screen File

M/DRIVE = Microdrive Type File

SPECIAL = Special File

D.ARRAY = Numeric Data Array

\$.ARRAY = Character Array

OPENTYPE = File created by OPEN # statement

EXECUTE = Execute File

Other program info

The right-hand column of the catalogue shows either:

- the start address and length of a CODE file
- or for a BASIC file, the line at which the program autoruns

Free space

The amount of free space left on the disc is displayed in kilobytes at the end of the catalogue.

Loading a File

Normal

LOAD [d/D][1/2/*]"[filename]"

Example:

LOAD D1"coolgame"

Abbreviated syntax

LOAD [p/P][program number]

Example:

LOAD p1

The filename when loading a program is case-insensitive.

Whether or not the saved program has upper or lowercase does not matter when loading.

When the program does not autorun, the 'O.K. G+DOS, 0:1' message should appear when the program has been loaded.

To load Snapshot files, you need to add 'S' or 'K' after the above syntax!

With the abbreviated syntax you don't need to include the S, K or SCREEN\$ identifiers to load snapshot files.

The abbreviated syntax also makes it much easier to load code files.

MERGE and VERIFY can also be used with the program number in this way - but ERASE cannot.

Wild-Cards

Wild-cards in a file name allow you to CATalogue, copy (using SAVE...TO) or ERASE a group of similar files in a single operation.

Example: when you want to erase a series of files called:

"numbers1", "numbers2", "numbers3" and "numbers4", you can enter:

```
ERASE D1 "n*"
```

You could also enter:

```
ERASE D1 "??mb*"
```

You would then erase all the files which have "mb" as their third and fourth letters.

Using '?' and '*' is also possible with the SAVE...TO and CAT commands. Thus if you wanted to copy all the files on disc 1 to disc 2, you could enter:

```
SAVE D1 "*" TO D2
```

If you want for example to copy all files starting with "numbers" to drive 2 and also give them a new file-name, you could enter:

```
SAVE D1 "numbers*" TO D2 "figures*"
```

Note that if you are using wild-cards, the new file name must have the same number of characters as the first - in this case eight.

Saving a File

SAVE [d/D][1/2/*]"[filename]"

Example:

SAVE D1"coolgame"

When a program with the same name already exists, the PlusDlite asks you whether you wish to overwrite the existing file.

You can then press Y (= Yes) or N (= No).

Don't use the characters ? or * in your file names when saving, as this causes problems with wildcard support.

Saving an autorun file

SAVE D1"[filename]" LINE [line number]

When a program is saved this way, it will run at line [line number] automatically when loading it.

Creating an autoload file

An autoload file is one which loads as soon as you "BOOT" the operating system. You are allowed one autoload file per disc.

The autoload file must be named "Autoload" (case insensitive).

Verifying a File

VERIFY [d/D][1/2/*]"[filename]"

Example:

VERIFY D1"coolgame"

This performs a further check to ensure that the program has been correctly saved, but will only work directly after saving a program, when the program is still in memory.

Renaming a File

ERASE [d/D][1/2/*]"[old filename]" TO "[new filename]"

Example:

ERASE D1"Squares" TO "Example 1"

Erasing a File

ERASE [d/D][1/2/*]"[filename]"

Example:

ERASE D1"Example 1"

Interface 1 compatibility

Unlike Interface 1, the PlusDlite returns an error message if you try to erase a non-existent file. When using programs originally written for Microdrive, you may sometimes need to delete ERASE commands in the listing to avoid the error message when the program is running.

Copying a File

With the same name

SAVE [d/D][1/2/*]"[old filename]" TO [d/D][1/2/*]

Example:

SAVE D1"Example 1" TO D2

With a new name

SAVE [d/D][1/2/*]"[old filename]" TO [d/D][1/2/*]"[new filename]"

Example:

SAVE D1"Example 1" TO D2"Newcopy"

One drive copying

When the target drive is the same as the source drive, you are prompted to "Insert TARGET disc - Press SPACE". After copying you are told "Insert SOURCE disc - Press SPACE", mainly to see if there are any other files to be copied (due to wildcard support).

Automatic reset

When copying is complete, the Spectrum automatically resets.

Unsupported file types

The SAVE...TO command will NOT copy three file types: snapshots, files created by the OPEN # statement and Microdrive Type files (created by some machine code programs written for microdrives).

Formatting New Discs

FORMAT [d/D][1/2/*]

Example:

FORMAT D1

Before a floppy disc can be used for the first time with the PlusDlite, it must be formatted. You can also format a previously used disc; the effect will be to wipe the disc clean of information.

Using HD floppy discs

Modern floppy disc drives are HD (high density) drives.

For example Ben Versteeg's dual floppy sets use HD drives only.

These HD drives do support DD (double density) formatting supported by the PlusDlite, but only when the DD type floppy discs are used.

All floppy discs have a hole for write protection, but HD floppy discs have an extra hole to let the floppy disc drive know a HD floppy disc is inserted. To still let the floppy disc drive act as DD drive with these floppy discs, cover the HD hole with a non-transparent tape or sticker.

Creating a bootable system disc

After formatting a new disc, it's a good idea to copy the PlusDlite system file onto it.

You can copy the system to a new disc by entering:

SAVE D[1/2/*] "+SYSTEM" CODE 8192,6656

Interface 1 Syntax Compatibility

Alternatively, the PlusDlite also understands the Interface 1 syntax. For example, you can load a file by entering:

```
LOAD *"m";1;"file-name"
```

This way most programs written for the Microdrive will be able to run without alteration on the PlusDlite's disc system.

One small change may be required: if a Microdrive program uses a "CLOSE #n" statement, you will have to modify this to:

```
"CLOSE #*n"
```

We are obliged to add the * to the syntax in order to correct a small bug in the Spectrum's ROM.

The PlusDlite's Reset Button

For those ZX Spectrum models without a reset button, the PlusDlite has an onboard reset button.

When you press the reset button, everything stored in the ZX Spectrum's RAM will be lost as usual, but the PlusDlite still retains the operating system in its own memory.

This way you don't need to reload the PlusDlite's system from the system disc after resetting.

Sector by Sector Copying – Two Drives

```
FORMAT D1 TO 2
```

or

```
FORMAT D2 TO 1
```

The first command formats the disc in drive 1 and copies the contents of the disc in drive 2 to the disc in drive 1.

The FORMAT...TO command will give you a disc which is identical in every respect to the one which has been copied. This command should only be used on a TWO DRIVE system.

Reading and Writing to a Sector

```
LOAD @D,T,S,Address / SAVE @D,T,S,Address
```

Example:

```
LOAD @1,4,1,30000
```

These commands are used for reading (or writing) a specified sector on the disc, where:

- D = the drive number (type either 1 or 2 - not the D)
- T = the track number from 0-79 or 128-207 for the second side
- S = the sector number from 1-10
- Address = 512 byte area where the contents is stored.

Clear screen and reset attributes

```
CLS #
```

This command clears the screen and attribute area, and resets BORDER, PAPER, INVERSE, BRIGHT, OVER and FLASH to the normal Spectrum start-up values.

The Execute File

An execute file is a machine code file occupying up to one sector length of memory (510 bytes). When loaded from disc it is executed (RANDOMIZE USR) in the PlusDlite RAM, not in the Spectrum memory, hence giving a programmer the ability to execute utility routines - such as renumbering a program - without affecting or using the Spectrum memory.

To save a sector length of memory as an execute file, enter:

SAVE D1"filename"X,Address

- X = the execute file identifier - just type X
- Address = the location in the Spectrum of the machine-code program, which has been assembled to run at 15318 (3BD6 hex).

To load and run the execute file, enter:

LOAD D1 "filename" X or LOAD P[n].

After execution, control is returned to the Spectrum.

Streams and Channels

Open a stream

OPEN #S;D[1/2] "filename" [IN/OUT]

This command opens a file on the disc and attach a stream number to it, so that you can print out to or input from that stream.

- S = Stream number - from 4 to 16 (type the number only)
- IN = When you specifically need an input or read file opened
- OUT = When you specifically need an output or write file opened

If you do not specify IN or OUT, it is an input file if the file-name is found in the catalogue, and an output file if the file-name is not found.

Also available is Microdrive syntax: OPEN #S;"m";1;"filename"

Closing a stream

CLOSE #*S

This closes the file and stream opened in the previous command.

S = Stream number; if not supplied, then all current open streams will be closed. Note the addition of the * to Microdrive syntax.

Moving a file

MOVE D[1/2]"filename" TO #S

Moves a file, one sector at a time, to either another file or a stream. This command reads the file and outputs it to the specified stream.

S = the stream number, from 4 to 16.

MOVE D[1/2]"filename-1" TO D[1/2]"filename-2"

In this case MOVE copies the first file to the second file.

Clearing all open streams and channels

CLEAR #

This command clears all open streams and channels, but it does not CLOSE an output file.

Snapshots

The snapshot feature allows to transfer virtually any piece of ZX Spectrum software (for example: loaded from tape) to disc easily by means of the Snapshot Button.

But this is also useful if you are a games-player, to be able to:

- start a game at an advanced level instead of at the beginning;
- come back to a game on another occasion and start at exactly the point where you had to leave it last time;
- keep a permanent record of your high scores.

You can create a Snapshot at any time and as often as you like.

Anything and everything held in the Spectrum's memory at that time is saved to the currently active drive, shown by the indicator light on the disc drive.

When you press the Snapshot Button, you'll notice that your program will be frozen at its current status, and you will see multi-coloured lines filling the borders on the screen.

You now have three Snapshot save options:

- Press key 3 to save only the current SCREEN.
- Press key 4 for a 48K PROGRAM to be saved to disc.
- Press key 5 for a 128K PROGRAM to be saved to disc. The procedure here is slightly different. The save will commence but then the program will appear to be frozen again.
If the picture on your screen (the picture - not the border) has changed, press key 'Y' (= Yes): if it has not, press key 'N'.

After each of these actions when the save is complete, the program will continue at the same point from which you left it.

Snapshot filenames

Your Snapshot file has been automatically labelled "Snap A/B/C" etc. with the letter of the alphabet dependent upon the file's position in the catalogue. Clearly, it would be difficult to remember the precise contents of your snapshot file if this were the only name possible. So it's wise to give your Snapshot file an identifiable filename.

Save on the other drive

If you have loaded the program on drive 1, but wish to save your snapshot file to drive 2 - or vice versa - press the CAPS SHIFT key on the Spectrum at the same time as pressing key 3, 4, or 5.

Exit snapshot function

If you hit the Snapshot Button accidentally, and wish to return immediately to your program, press key X on the Spectrum.

Load a snapshot

LOAD D*" [filename]"S (for a 48K file)

LOAD D*" [filename]"K (for a 128K file)

LOAD D*" [filename]" SCREEN\$ (for a screen file)

Without the S, K and SCREEN\$ identifiers, the Snapshot files will not load - unless you use the special abbreviated syntax.

Error Reports

When you are using the PlusDlite, there are some additional error reports which refer specifically to disc handling problems. These are some of the more important you may meet.

NONSENSE IN BASIC

This is a standard Spectrum error report, and if it appears as soon as you start trying to use the PlusDlite, you have probably not

Loaded the PlusDlite system by performing the booting process, or you may have made a typing error.

Nonsense in G+DOS

The PlusDlite can't understand the command; check the syntax.

FORMAT Data Lost

This means that the disc has been damaged or the file has been corrupted.

Remember floppy discs are sensitive to magnetic fields!

Copy any remaining files to another disc immediately.

Be careful using the same disc again.

SECTOR Error

This means that the information you've tried to save has been corrupted, but your disc has not been damaged and doesn't need to be reformatted. The numbers after the error message tell you which track and which sector have been corrupted.

If the Sector Error or Format Data Lost messages appear regularly, you may have a problem with your disc drive. The head may be dirty, or the drive may not be centring the discs correctly on insertion.

Disc Write PROTECTED

You cannot save, erase, or modify files on this disc until you uncover the security lock on the disc.

File NOT FOUND

You are trying to load, copy, verify, erase or rename a file which is not present on the disc. Make sure that you have used the file identifier - S, K or SCREEN\$ - if necessary.

Not enough SPACE on disc

The file you are trying to save is too large for the space remaining on the disc.

Directory FULL

The PlusDlite's directory can hold a maximum of 80 files. Either ERASE some files to create space or insert another disc.

More information

There are numerous more articles written for the PlusD (and hence for the PlusDlite), in magazines and on www.worldofspectrum.org, with lots of technical hints.

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