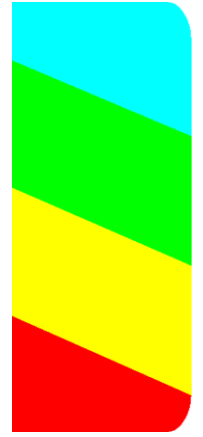


The  
**DivMMC EnJOY!  
PRO ONE**



with  0.8.7



*SD card interface for the  
Sinclair ZX Spectrum*



*Dual configurable  
joystick ports*

*Auto detection  
of ZX Spectrum  
model*

*Throughput  
edge connector*

*Dual SD card  
sockets*

***Power off your ZX Spectrum before connecting this interface***

***No need to read the rest of this manual before using  
the DivMMC EnJOY! PRO ONE, just plug and play!***

Manufactured by Ben Versteeg

**BYTEDELIGHT**

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## Overview

With the DivMMC EnJOY! PRO ONE you can load software from SD card to your ZX Spectrum easily! The DivMMC EnJOY! PRO ONE has two configurable joystick ports, two full size SD card slots, a throughput edge connector and advanced auto detection features to make it plug-and-play. There is an NMI button for an easy NMI Browser menu with lots of functions, and there is a reset button.

The DivMMC EnJOY! PRO ONE comes with ESXDOS, which is FAT and FAT32 compatible, hence no additional pc software is needed.

The most used file type on ESXDOS is .TAP, which can contain a complete ZX Spectrum game in one file. Other supported formats are .SNA and .Z80 snapshot files and .TRD files.

Check out [www.worldofspectrum.org](http://www.worldofspectrum.org) for many ZX Spectrum titles.

You can also load and save separate files directly from and to the SD card!

## In the box

Your DivMMC EnJOY! PRO ONE interface is delivered with an SD card and this manual.

The card is formatted and contains some ZX Spectrum games and demos for you to try instantly when you install your DivMMC EnJOY! PRO ONE for the first time, without having to download software first.

## Compatibility

The DivMMC EnJOY! PRO ONE has been successfully tested with:

- ZX Spectrum 16K board issues 1 and 2
- ZX Spectrum 48K all board issues
- ZX Spectrum 48K Plus all board issues
- ZX Spectrum 128K all board issues
- ZX Spectrum +2
- ZX Spectrum +2A
- ZX Spectrum +2B
- ZX Spectrum +3
- ZX Spectrum +3 with +3e ROMs
- Investronica ZX Spectrum 48K Plus\*
- Investronica ZX Spectrum 128K
- Harlequin 48K rev.G
- Harlequin 48K rev.H
- Sparrow Lite rev.3 with Nebula
- ZX-HD HDMI interface
- ZX-AY external stereo sound interface
- Kempston Mouse Turbo 2017 interface

\*The Investronica ZX Spectrum 48K Plus has an integrated joystick interface that conflicts with the Kempston mode on the PRO ONE. When using this ZX Spectrum model, select another joystick interface on the PRO ONE. Find out more in the Joystick interface paragraph.

## Compatible joysticks

You can use any 9-pin Atari compatible joystick or gamepads, with these exceptions:

- Sinclair SJS1 or SJS2 joysticks, which are not Atari-pinout compatible and can cause faults
- Wireless joysticks, since many seem to overload the joystick signals causing faults

Please know that for the Sinclair Joystick configuration, you still need an Atari-compatible joystick, not a Sinclair SJS1 or SJS2 joystick!

## ***Make sure the ZX Spectrum's edge connector is clean***

It's important that your ZX Spectrum has a clean edge connector before connecting any interface. Advised is to use cotton swabs with >95% pure (e.g. isopropol) alcohol.

## Notification Leds

The DivMMC EnJOY! PRO ONE has two notification leds.

The 'POWER' led indicates the ZX Spectrum with DivMMC EnJOY! PRO ONE is powered on.

And the 'CARD' led shows the SD card activity (blue for card1, red for card2).

## Throughput edge connector

The DivMMC EnJOY! PRO ONE has a throughput edge connector for any device, such as the ZX-HD HDMI interface or ZX-AY external stereo audio interface (check out ZXspectrum.shop for those).

## Joystick interface configuration

The DivMMC EnJOY! PRO ONE has two configurable joystick ports numbered '1' and '2'.

The default configuration is Kempston joystick for port 1, and Cursor joystick for port 2.

| DIP switch |     |                             |                    |
|------------|-----|-----------------------------|--------------------|
| 2          | 3   | PORT1                       | PORT2              |
| ON         | ON  | KEMPSTON JOYSTICK           | CURSOR JOYSTICK    |
| ON         | OFF | SINCLAIR1 JOYSTICK          | SINCLAIR2 JOYSTICK |
| OFF        | ON  | KEMPSTON JOYSTICK           | FULLER JOYSTICK    |
| OFF        | OFF | JOYSTICK INTERFACE DISABLED |                    |

A DIP switch is in the 'ON' position when pushed down like this:



The ZX Spectrum +2, +2A, +2B or +3 have Sinclair1 and Sinclair2 ports already integrated, so for those you could select Kempston and Fuller joystick on the DivMMC EnJOY! PRO ONE (Cursor joystick will conflict with Sinclair1 or Sinclair 2 joystick as well).

When the DivMMC EnJOY! PRO ONE joystick ports are configured to Sinclair 1 and Sinclair 2 joystick, and the PRO ONE is connected to a ZX Spectrum +2A, +2B or +3, the joystick ports of the PRO ONE are automatically disabled to avoid conflicts.

Unfortunately there are 2 types of Fuller joystick standards. The DivMMC EnJOY! PRO ONE supports the older standards which most games that have Fuller support will work with.

## Enabling or disabling ESXDOS

By default ESXDOS is enabled, making it possible to access the FAT or FAT32 formatted SD card with BASIC commands, and using the NMI Browser by pressing the NMI button.

However there are some situations you might need to disable ESXDOS, for example if you want to use the +3e ROMS which allow direct SD card access from +3 BASIC on a ZX Spectrum +3.

Another situation for which you need to disable ESXDOS is when you want to upgrade the ESXDOS firmware.

Detailed instructions for this are found on this website: <http://www.bytedelight.com/?p=140>

| DIP SWITCH |   |
|------------|---|
| 1          | ON ESXDOS ENABLED (default)                 |
|            | OFF ESXDOS DISABLED / firmware upgrade mode |

## Connecting the DivMMC EnJOY! PRO ONE

***Always disconnect the power from your ZX Spectrum before connecting any interface!***

When powered off, connect the DivMMC EnJOY! PRO ONE to your ZX Spectrum carefully and insert the SD card.

Now you can power up your ZX Spectrum.

### Powering up with the DivMMC EnJOY! PRO ONE connected

This DivMMC EnJOY! PRO ONE interface comes with ESXDOS.

Once you power on your DivMMC EnJOY! PRO ONE, you should briefly see a black screen shown here at the right, with the ESXDOS logo and information about the card detected, and system files that are being loaded.

If you do not see this black boot-screen, or the system files are not being loaded properly, please check this website: [troubleshoot.bytedelight.com](http://troubleshoot.bytedelight.com).



#### Introduction

After the ZX Spectrum with DivMMC EnJOY! PRO ONE had finished the boot sequence, the introduction application will load automatically.

You may end this pressing S, or pressing D to disable it with the next boot.

#### USR 0 Mode

After the ZX Spectrum with DivMMC EnJOY! PRO ONE had finished the boot sequence, you will enter 48K BASIC in USR 0 mode.

For ZX Spectrum 128K / +2 / +2A / +2B or +3 users: the DivMMC EnJOY! PRO ONE starts the ZX Spectrum in USR 0 mode. This mode supports 128K software and using the 3-channel audio chip in 128K models.

128K programs will however run fine.

#### Playing Ultimate games on ZX Spectrum 128K models

This is not specifically DivMMC EnJOY! related, but lots of people have been asking for it.

When loading Ultimate titles (and some other games, such as 'Sly Spy: Secret Agent') on any ZX Spectrum 128K model with DivMMC EnJOY! or DivIDE, the 128K paging system needs to be 'locked'.

To achieve this, perform:

OUT 32765,48

Then load the game by either NMI menu or by .TAPELOAD.

You only have to enter the OUT command once, as it disables 128 memory paging completely until the next power off.

When you want to play 128 games after entering that OUT command, you do need to power off the ZX Spectrum first.

# Using the DivMMC EnJOY! PRO ONE

## Loading a game with the NMI Browser

This is the simplest way of loading a game or program.

Press the NMI button at any time and the NMI Browser will appear. Press H for a help screen.

Use the cursor keys or keys 6 or 7 to select a file. Press ENTER to load and run it.

More info about the NMI Browser is found in the separate 'NMI Browser' paragraph.

## Getting software on the memory card

Disconnect power from your ZX Spectrum and pull the SD card from the DivMMC EnJOY! PRO ONE.

Put the SD card into a card reader on your PC or laptop and you are able to copy files to the SD card.

Visit [www.worldofspectrum.org](http://www.worldofspectrum.org) to download lots of games and other software!

Please note that a maximum of 704 files per folder is supported.

When having more files than that, split the file-set in subfolders.

## Supported emulator file formats

The DivMMC EnJOY! PRO ONE with ESXDOS supports .TAP, .SNA, .Z80 and .SCR files, and there is limited support for .TRD files.

The .TZX file format is not supported; this file format contains exotic loading systems (speed loaders, loaders with copy protections, etc.) which need a lot of CPU power to decode.

There is a limitation in snapshot files (.Z80 and .SNA): 128K snapshot files will often only work on the ZX Spectrum 128K ('toast rack') but not on the ZX Spectrum +2A, +2B and +3 because of ROM incompatibility.

# ESXDOS 0.8.7

Welcome to ESXDOS, the most advanced firmware for mass storage interfaces for the ZX Spectrum!

ESXDOS is still continuously in development, thus being a future-safe choice for your ZX Spectrum interface.

## New ESXDOS 0.8.7 features

- Bugfixes
- New/Updated Commands: .dfwload, .more, .dumpmem and .sercp

## New ESXDOS 0.8.6 features

- New BASIC and many new "DOT" commands
- Autoboot-support

## Currently unsupported features / known bugs

- No long file names
- No wildcards in BASIC commands

## Cold start

To perform a cold start without powering off your ZX Spectrum, press the reset-button and hold the SPACE key while resetting.

This will reinitialize ESXDOS.

## Using drive names

Drives are named according to their type and partition number: sd0 for the first SD card.

Using '\*' in commands will point to the SD card currently in use.

You can see a list of drive names when ESXDOS runs its initial BIOS drive detection (on a cold start).

## Using directory names

You can use the name of directories in all commands, and use '/' at the start of the directory to point to the root of the SD card.

For example:

LOAD \*/\*/sys/AUTOBOOT.BAS" – this loads AUTOBOOT.BAS from whatever directory you are currently in.

.cd /sys/config – this will set the current directory to /SYS/CONFIG

## New BASIC commands

On all BASIC commands that use a drive parameter, you can use \* for the current drive.

[...] means it's an optional parameter.

GOTO [drive] ["path"]

Example:

GOTO hd0"demos"

This will change the current drive and directory to hd0:/demos.

You can use it to change the current drive, dir, or both.

CAT [drive]

Example:

CAT, CAT \*, CAT hd1

Without specifying a drive a fast CAT is done (no speccy header info is displayed).

LOAD drive "path/filename" [CODE] |[SCREEN\$]

Example:

LOAD \*/\*/test/bla", etc

SAVE drive "path/filename" [LINE] |[CODE] |[SCREEN\$]

Example:

SAVE \*"filename" SCREEN\$, etc

ERASE [drive] "path/filename"

Example:

ERASE \*"filename", etc

## DOT commands

Files located in the /BIN directory are so-called DOT commands.

These system commands can be executed from BASIC by typing: ".[command] <args>".

DOT commands are self-explanatory: enter the command without arguments to get more information.

An example, entering:

```
.tapeout
```

Will show:

```
tapeOUT v0.1 (c) phoenix
```

```
Usage: tapeout [args] [tapfile]
```

```
-c: Close file
```

```
-o: Overwrite file
```

For developers: each DOT command has 7.5K of RAM available and may call any ESXDOS syscall.

Commands can also exit to BASIC with a custom error message.

.ls

Show directory listing

.tapeout somefile.tap

Attach .tap file for writing

.mv oldname newname

Rename/move file/dir

.cd somedir

Change directory

.chmod +h somefile.sys

Set/unset attributes on file/dir

.cp source target

Copy file

.tapein somefile.tap

Attach .tap file for reading

.mkdir newdir

Create a new directory

.more textfile

Display the contents of a textfile

New commands in ESXDOS 0.8.5:

.vdisk

.gramon

.playwav

.speakcz

.dskprobe

.snapload

New commands in ESXDOS 0.8.6:

.playtfm

.launcher

.playpt3

.rm

.ls

.hexview

.tapein

.drives

.tapeout

.mktrd

.partinfo

.128

New commands in ESXDOS 0.8.7:

.dfwload

.more

.dumpmem

.sercp

## TR-DOS emulator

Either use the NMI browser to attach/auto-LOAD .TRDs, or use the .vdisk command:

```
.vdisk unit <filename>
```

Unit 0 = Drive A, Unit 1 = Drive B, etc.

If you specify just the unit, it will eject the virtual drive.

You can use .dskprobe to check the contents of the vdisk.

## **NMI Browser**

Pressing the NMI button will bring up the NMI Browser.  
From that menu the following keyboard shortcuts can be used.

### Up, Down

Move cursor on page

### Left, Right

Change page

### Enter

RUN selected file (if supported)

### r

Reset(Warm)

### s

Create snapshot (auto incrementing name starting with snap0000.sna on initialisation of ESXDOS).  
If you get ERROR 18 it's because file already exists, try again.

### 1

Go to parent directory (chdir to '..')

### v

Show screen from .scr and .sna files (or files with ZX header of type 'CODE')

### i

Attach tape file to input slot

### Space

Exit from NMI mode

### H

Onscreen help

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Website:

[ByteDelight.com](http://ByteDelight.com)

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Shop:

[ZXSpectrum.shop](http://ZXSpectrum.shop)