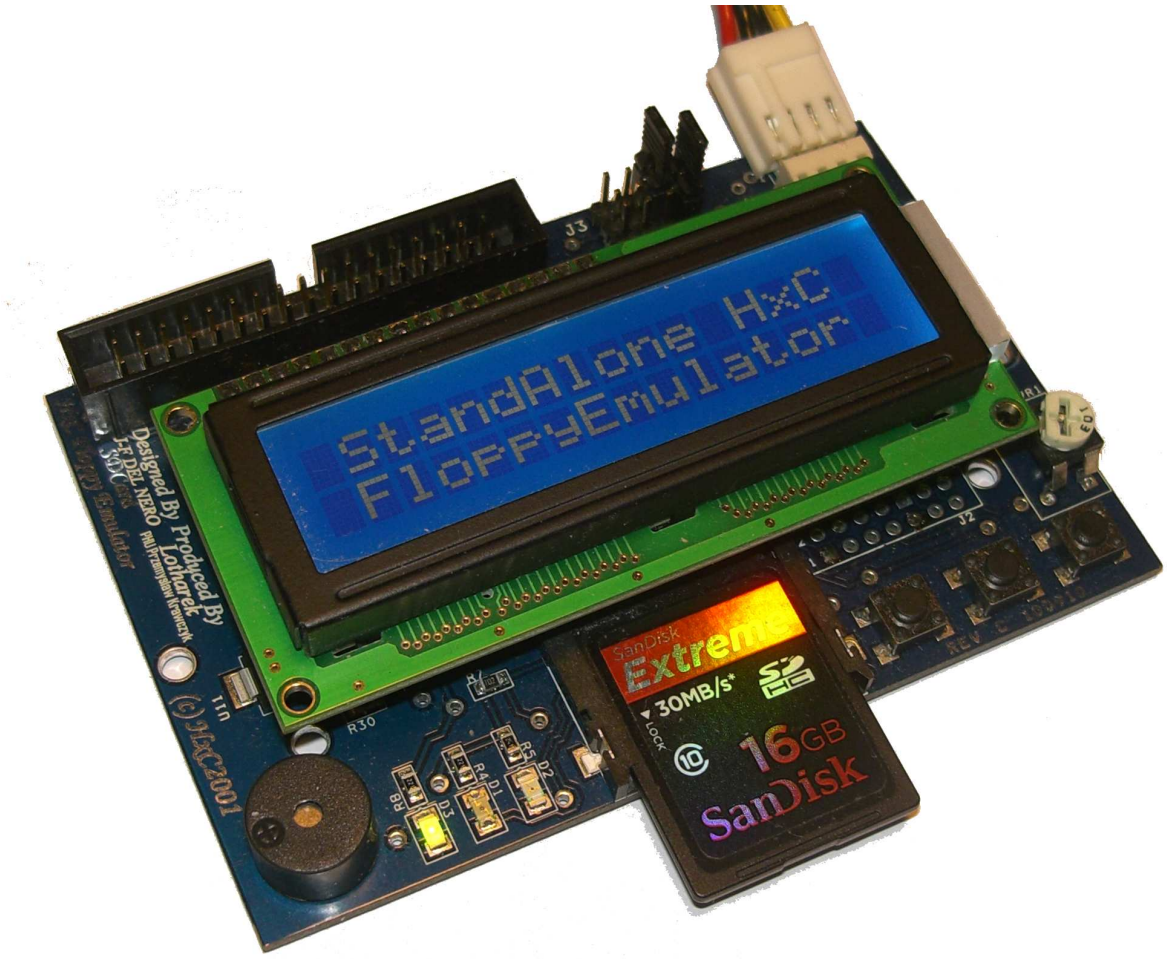
SDCard HxC Floppy Emulator

User Manual



http://hxc2001.com/

SDCard HxC Floppy Emulator User Guide Disclaimer

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http://www.lotharek.pl/

SDCard HxC Floppy Emulator User Guide issued August 2011.

Summary:

Figure Summary:

1 General description / requirement

The SDCard HxC Floppy Emulator is an universal floppy drive emulator based on SD/SDHC memory card.

To use it you need :

- A computer/device/sampler/keyboard with a Shugart or PC compatible floppy disk drive interface.
- An SD or SDHC memory card (from 64MB up to 32GB).
- A PC to pre-process/prepare floppy file images and copy them on the SDCard.

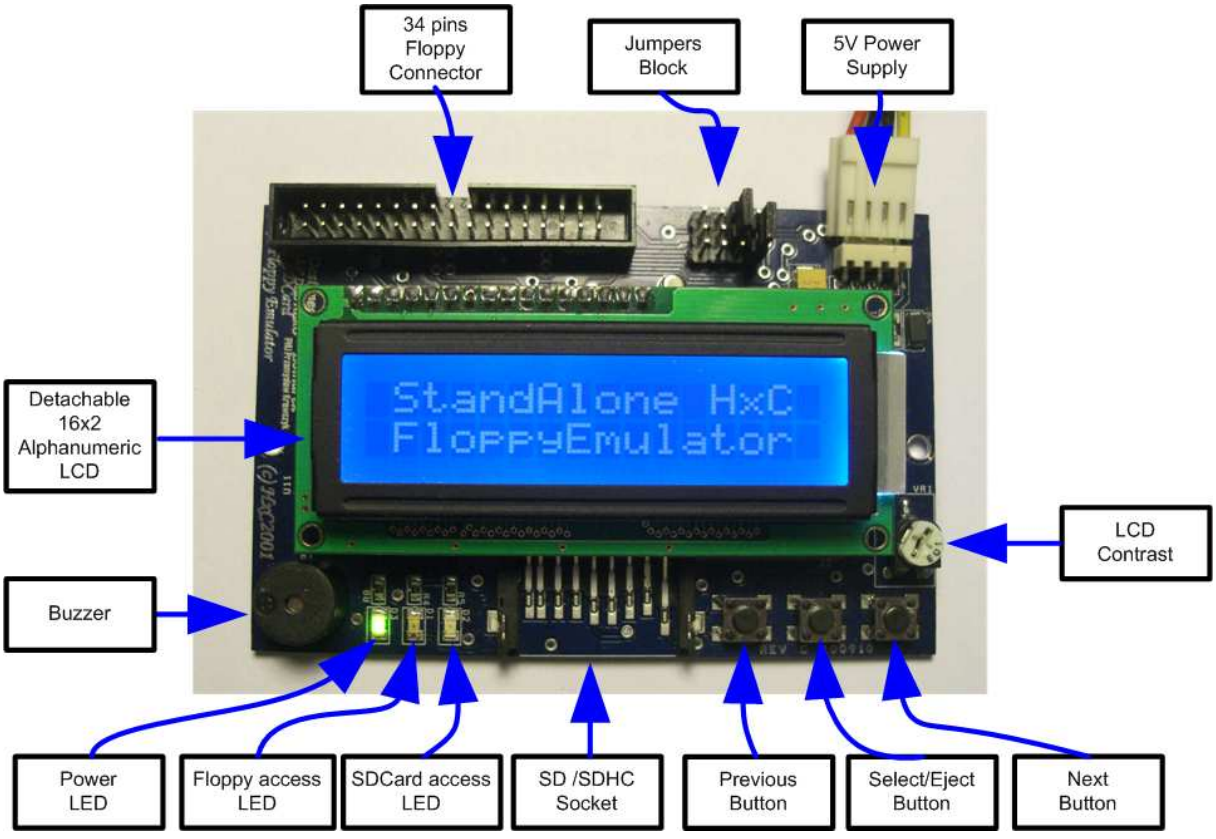


Figure 1 : The SDCard HxC Floppy Emulator

2 Hardware requirement / setup

2.1 Power supply

The SD HxC Floppy Emulator need a **+5V** power source to work.
The power source must be able to deliver at least 500mA for proper operations (200mA for the SD HxC Floppy Emulator and 200mA for the SD/SDHC Card).
The power supply connector is a standard floppy disk drive power supply connector.
The +12V line is not used by the emulator.

Below the power connector pinout:

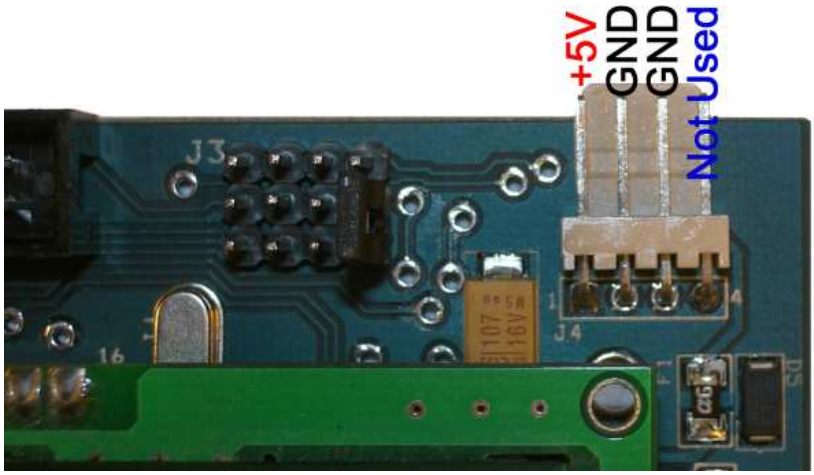


Figure 2 : Power supply connector pinout

A special care should be taken before connecting the power supply. The device and the host computer can be damaged if the device is powered with a bad voltage. Some systems doesn't use the standard pinout : +5V and +12V power supply lines can be reversed.

Amstrad CPC6128 users : The CPC6128 floppy connector has a reverse pinout : +5V and +12V are exchanged. Unlike others systems : Orange wire=5V, Red wire=12V, Black wires=GND. Special care must be taken before connecting the power supply connector on the CPC6128.
To test the device securely, disconnect the +12V power source since the CPC6128 doesn't need it.

2.2 Floppy interface connection

A 34 pin floppy cable must be used to connect the device to the host computer. This one can be twisted or non-twisted.

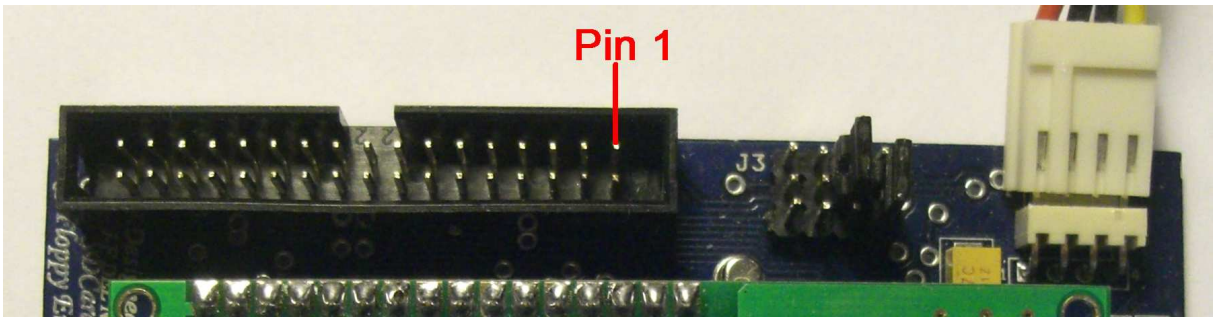


Figure 3 : Floppy connector

Note 1: On most computer, pin 1 are indicated by the red wire on the on-place floppy cable. In this case the floppy cable may be connected directly (red wire on the pin 1 side – to the right).

Note 2: On some case (Amiga,...), the original floppy cable is reversed : Pin 1 is in the opposite side of the red wire. In this case connect the floppy cable on the opposite side to the emulator (red wire to the left), or reconnect the floppy cable in the right side on the Amiga motherboard. If your are using a twisted cable, the red wire MUST be to the right (pin 1).

Note 3: If you are using the external floppy port of an **Amstrad CPC6128** computer, you must connect the floppy cable on the opposite side to the emulator (red wire to the left).
To switch the emulator as the first disk drive and disable the internal disk drive, wire 23 must be connected to the ground (with wire 24 for example).

Note 4: If after connecting and setting the jumpers, the Floppy access LED is still always on, this probably means that the floppy cable is connected in the wrong way. (Drive select lines forced/connected to the ground).

2.3 Jumper settings

Here is the jumper configuration settings:

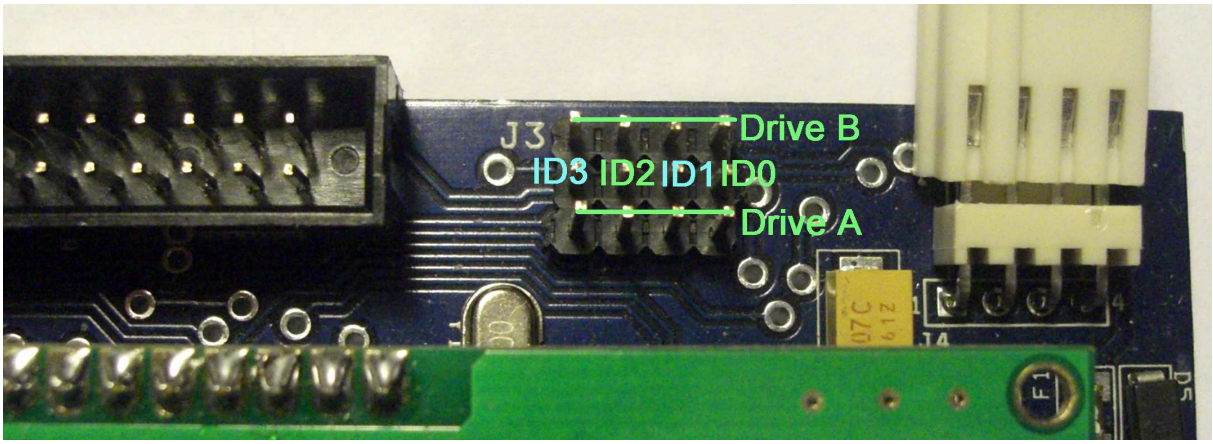


Figure 4 : Jumpers settings

To use the device you must assign at least one ID drive for the emulator.
Since the emulator is able to emulate 2 disk drives, there are 2 ID inputs :"**Drive A**" and "**Drive B**".

Unlike real floppy disk drive the SDCard HxC Floppy Emulator doesn't use the motor control line. So there are only one jumper to set per virtual disk drive.

Depending of the host computer type and the floppy cable used (twisted or not), the meaning of IDx/jumper lines may change. Below you can see some examples of jumpers settings.

2.3.1 Atari ST / Amiga / Shugart jumper settings

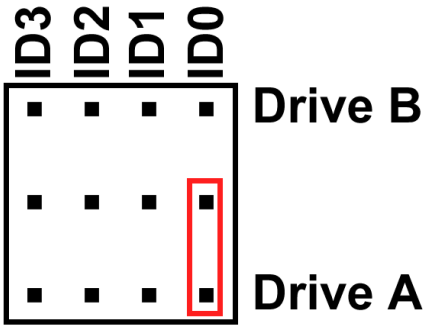
ID line	ID3	ID2	ID1	ID0
Host Line	MTRON	DS2	DS1	DS0
Function	Motor On	DF2	B: / DF1	A: / DF0

Table 1 : Shugart jumper setting

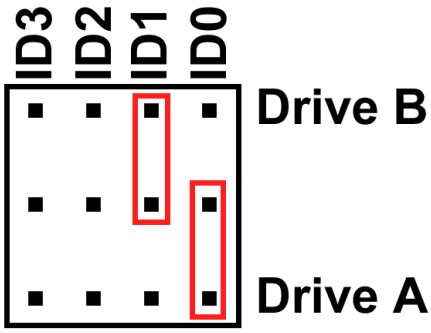
Note : If your are using a twisted floppy cable, the ID lines are inverted. In this case IDs lines meaning are changed:

ID line	ID3	ID2	ID1	ID0
Host Line	DS0	DS1	DS2	MTRON
Function	A: / DF0	B: / DF1	DF2	Motor On

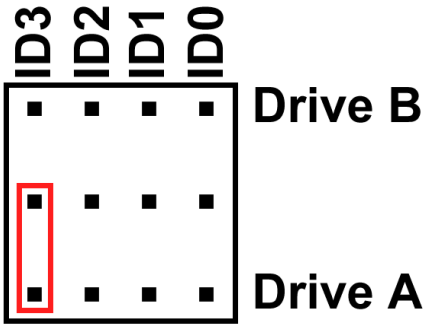
Table 2 : Shugart jumper setting (twisted floppy cable)



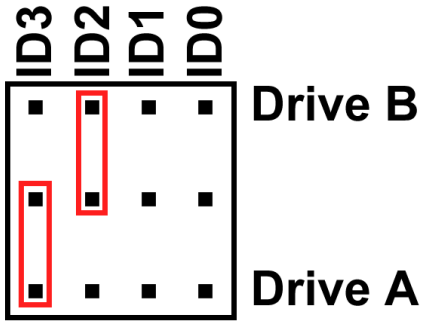
Emulator as the first disk drive
(A: / DF0)



Emulator as the first and second disk drive
(A: / DF0, B: / DF1)



Emulator as the first disk drive
(A: / DF0)
with a twisted floppy cable!



Emulator as the first and second disk drive
(A: / DF0, B: / DF1)
with a twisted floppy cable!

2.3.2 PC Compatible jumper settings

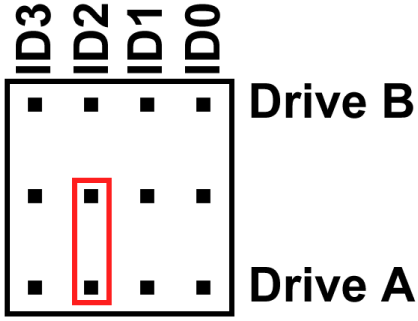
ID line	ID3	ID2	ID1	ID0
Host Line	/MOTEB	/DRVSA	/DRVSB	/MOTEA
Function	Motor Enable B	Drive Sel A:	Drive Sel B:	Motor Enable A

Table 3 : PC jumper setting

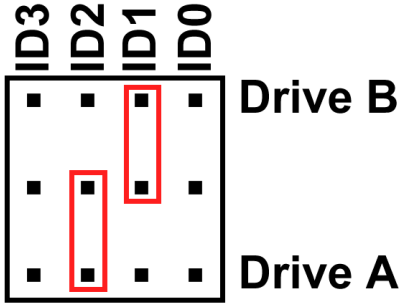
Note : If your are using a twisted floppy cable, the ID lines are inverted. In this case IDs lines meaning are changed:

ID line	ID3	ID2	ID1	ID0
Host Line	/MOTEA	/DRVSB	/DRVSA	/MOTEB
Function	Motor Enable A	Drive Sel B:	Drive Sel A:	Motor Enable B

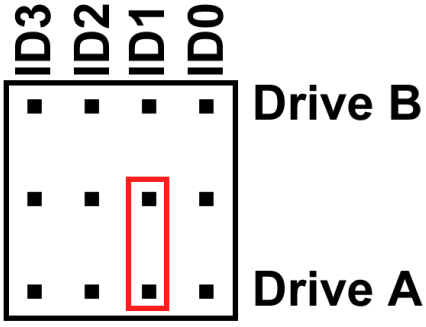
Table 4 : PC jumper setting (twisted floppy cable)



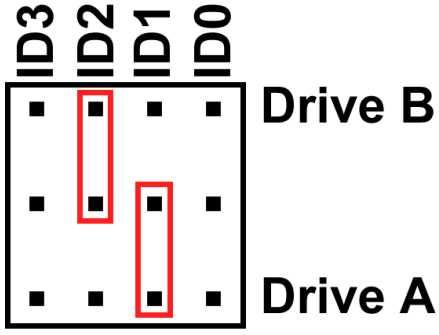
Emulator as the first disk drive (A:)



Emulator as the first and second disk drive (A:, B:)



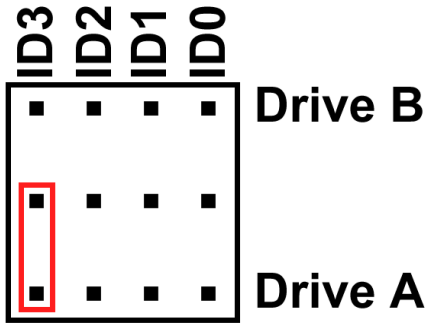
Emulator as the first disk drive (A:)
with a twisted floppy cable!



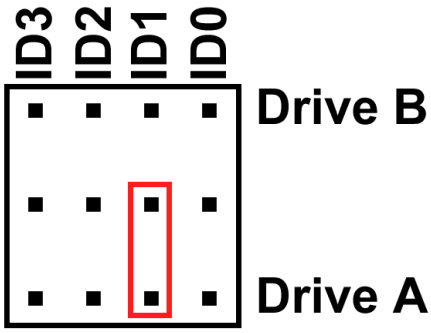
Emulator as the first and second disk drive (A: / DF0, B: / DF1)
with a twisted floppy cable!

2.3.3 Amstrad CPC6128 jumper settings

Below the possible jumper settings for Amstrad CPC 6128 (external port connection).

<table>
<tr>
<td> 

Emulator as the first disk drive

Note : In this case the internal floppy disk drive must be disabled.
To do this you can connect wire 23 of the external floppy cable to the ground (wire 24), or simply unplug the floppy cable from the internal disk drive.</td>
<td> 

Emulator as the second disk drive

(type |b to select the floppy emulator, and |a to select the internal disk drive)</td>
</tr>
</table>

3 Quick step by step guide

To use the SDCard HxC Floppy Emulator, follow this guide :

3.1 SDCard HxC Floppy Emulator installation

Remove the original floppy disk drive from the host computer, and replace it by the SDCard HxC Floppy Emulator.
Please read the "Hardware requirement/setup" section (Page 6) for more details.

3.2 Preparing the SDCard

► Format the SDCard in FAT32

To use the SDCard with the SDCard HxC Floppy Emulator this one must be formatted in **FAT32.** Others file system are currently not supported.

So the first thing to do is format the SDCard in FAT32:

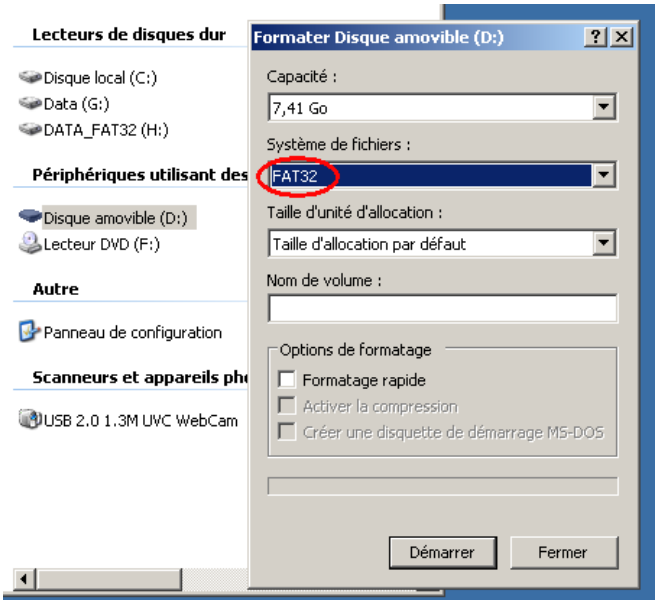


Figure 5 : Format the SDCard in FAT32

►Copy the file HXCSDFE.CFG into the SDCard

The SDCard HxC Floppy Emulator need the HXCSDFE.CFG be present on the SDCard. This file contains the floppy emulator settings and the path of last floppy file used/selected.

The HXCSDFE.CFG file can be created with the HxC Floppy Emulator software or can be found in the firmware zip file:
http://hxc2001.free.fr/floppy_drive_emulator/SDCard_HxCFloppyEmulator_firmware.zip

For more informations about the SDCard HxC Floppy Emulator settings please go to the SDCard HxC Floppy Emulator settings window chapter (page 19).

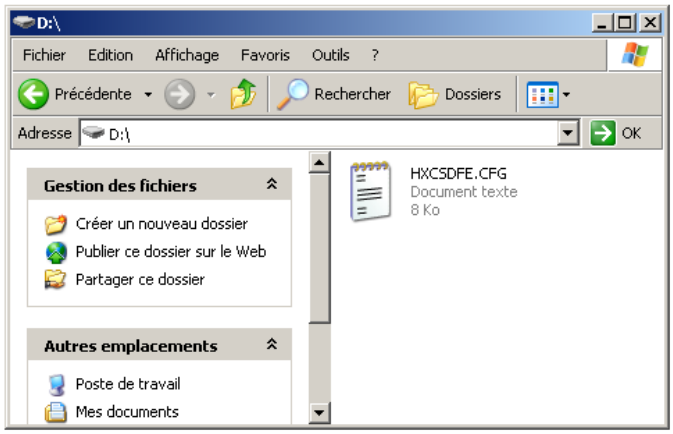


Figure 6 : Copy HXCSDFE.CFG to the SDCard

After this the SDCard is usable with the SDCard HxC Floppy Emulator.
Now floppy file images can be copied to this SDCard .

NOTE: If you want to use the floppy image file selector, copy the AUTOBOOT.HFE file after the HXCSDFE.CFG file.
For more details please go to the SDCard HxC Floppy Emulator file selector section (page 23).

3.3 Convert/Copy floppy images to the SDCard

The HxC Floppy Emulator software allows you to create, convert and manage floppy disk images files for the SDCard HxC Floppy Emulator.
This software can be started by double-clicking on the HxCFloppyEmulator.exe executable.

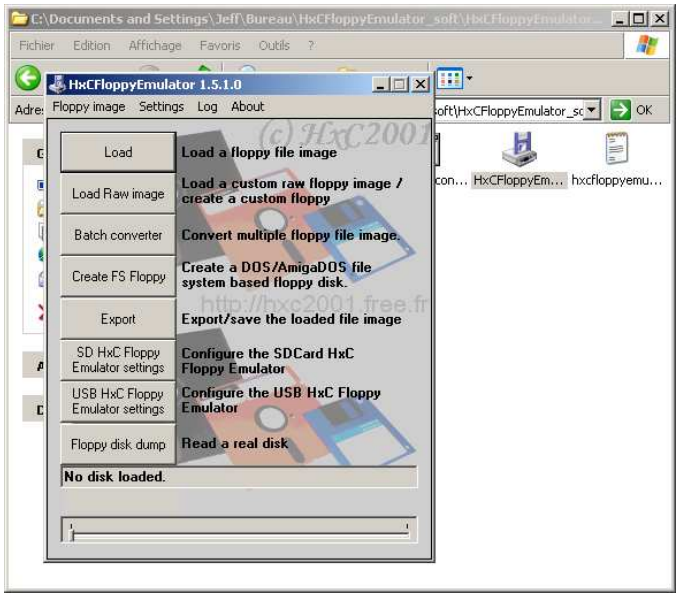


Figure 7 : Start HxC Floppy Emulator software

► Use the “Batch converter” function

To convert a large quantities of floppy images, the batch converter can be used. To do this, click on the <<Batch converter>> button. The following window should appears:

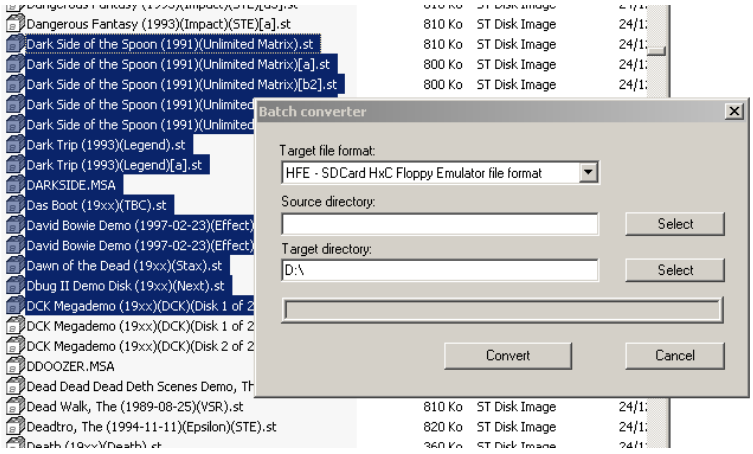


Figure 8 : The batch converter window

Choose the SDCard disk drive (D: here) as target directory.
For the SDCard HxC Floppy Emulator the target file format must be set to HFE.
Drag and drop on the window all floppy images you want to convert and copy in the SDCard.

Once done, the SDCard contains HFE floppy images. Now you can insert it in the SDCard HxC Floppy Emulator.

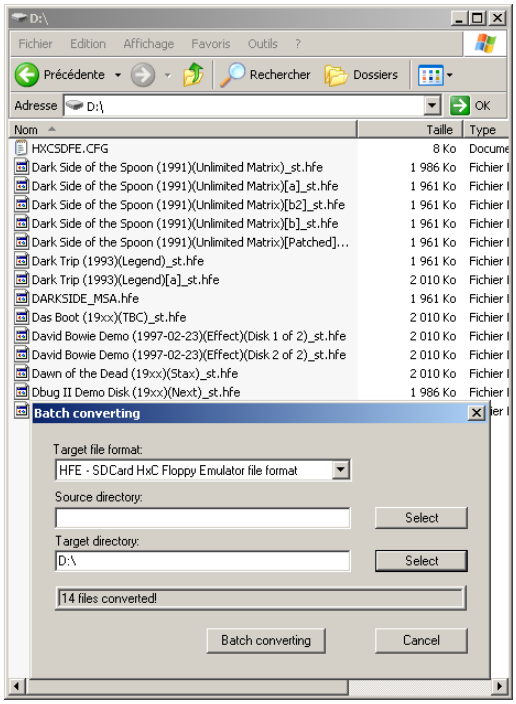


Figure 9 : HFE files after conversion

Note 1: You can recursively convert a folder and its subfolders by specify its path in the "Source directory" field.

Note 2: A HFE file can be converted back to a standard floppy image : ADF/IMG or IMD. You just need to change the Target file format field.

3.4 Use the SDCard with the SDCard HxC Floppy Emulator

When you insert the SDCard in the emulator, this drive selector should appear. Select the disk drive you want use with buttons < and > and press ^v to confirm.

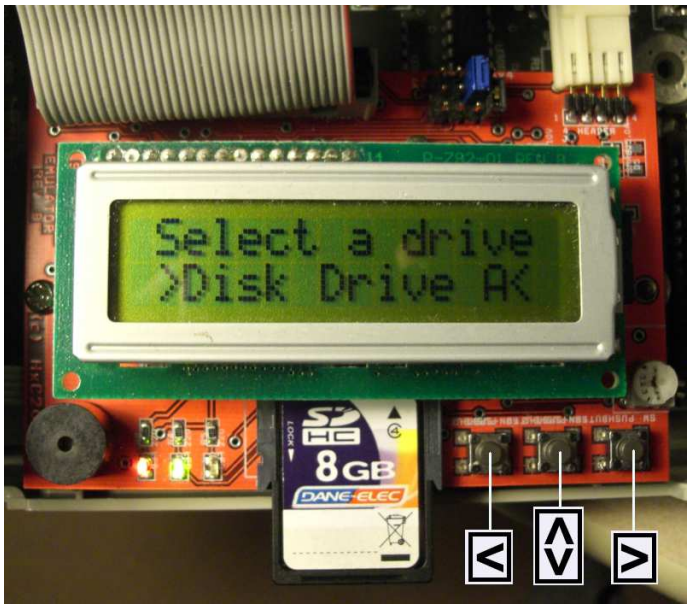


Figure 10 : Disk drive menu selector

Note: The drive menu selection can be disabled if you don't intend to use the two-drive emulation feature. More details in SDCard HxC Floppy Emulator settings window (page 19).

You can now browse the SDCard with < and > buttons and ^v to enter a subfolder or load a floppy image disk.

Figure 11 : Browsing the SDCard

Figure 12 : Floppy image disk loaded

The floppy disk image is loaded and can be access by the host computer.

To eject the floppy disk image press ⇕ briefly.
You can also directly change floppy disk images by pressing ⇐ or ⇒ buttons.

If you want to come back to the disk drive selector menu, in order to insert another floppy image to the other virtual disk drive, press ⇕ until this menu appear.

Note: The floppy write protect can be set/unset by using the SDCard write protect switch.

Figure 13 : SDCard write protect switch

4 HxC Floppy Emulator software

The HxC Floppy Emulator software allows you to convert or create floppy image files for the SDCard HxC Floppy Emulator.

The list of supported file image format can be found in Supported file format / Input (page 28) or on the SDCard HxC Floppy Emulator project page :
http://hxc2001.free.fr/floppy_drive_emulator/

4.1 The main window

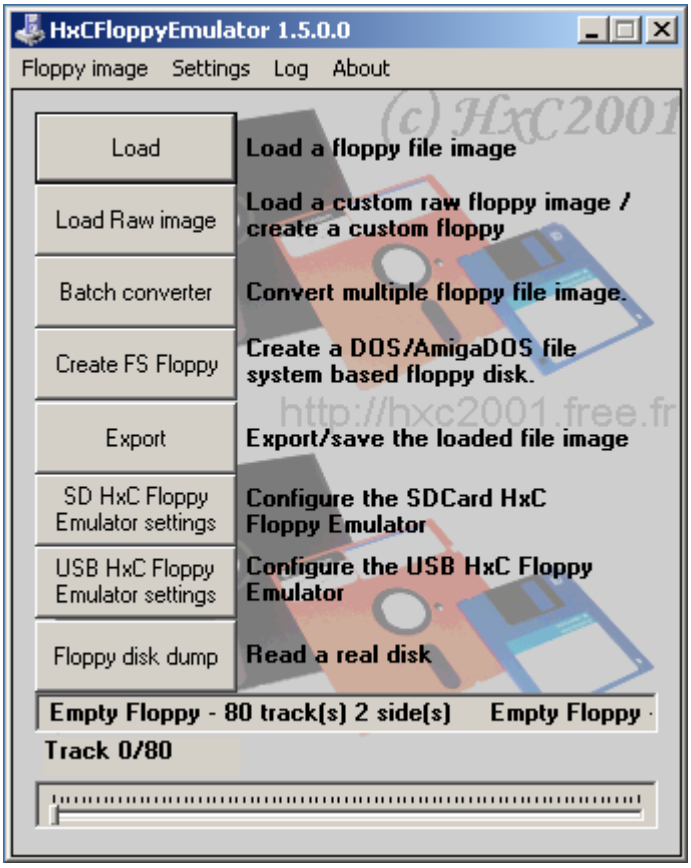


Figure 14 : HxC Floppy Emulator software functions

This window allows you to :

► Load & Load Raw image:	Load a floppy image.
► Batch converter:	Convert automatically a folder of floppy image.
► Create FS Floppy:	Create a MS DOS or Amiga DOS floppy disk.
► Export:	Export/convert the loaded floppy image.
► SD HxC Floppy Emulator settings:	Edit/create the HXCSDFE.CFG file.
► USB HxC Floppy Emulator settings:	Change the USB HxC Floppy Emulator settings.
►Floppy disk dump:	Dump a floppy disk and load it.

4.2 SDCard HxC Floppy Emulator settings window

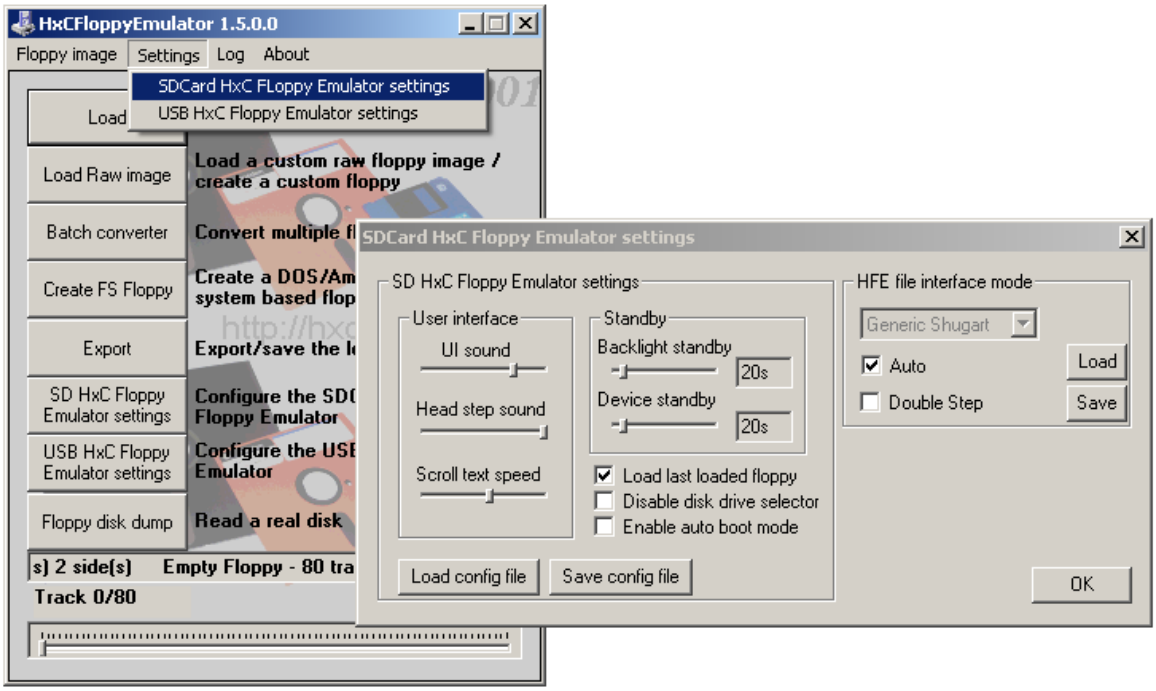


Figure 15 : SDCard HxC FLoppy Emulator settings window

This window allows you to create/edit the HXCSDFE.CFG file to change the behavior of the emulator :

►UI sound : This slide can be used to change the user interface sound level of the emulator.

►Head step sound : This slide can be used to change the head step sound level of the emulator.

►Backlight standby : This slide can be used to change LCD backlight power off timing.

►Device standby : This slide can be used to change standby timing.

►Load last loaded floppy : If checked, the last selected floppy image are auto-loaded at power up.

►Disable disk drive selector : If checked, the drive selection is disabled.

►Enable auto boot mode : If checked, the autoboot.hfe file is loaded at power up. If you intend to use a floppy image software selector, this feature must be set.

►HFE file interface mode : The floppy interface mode are automatically set into the SDCard HxC Floppy Emulator file image (HFE). To force/change the floppy disk interface mode, before converting files, uncheck "Auto" and choose the wanted floppy interface mode.

4.3 Custom raw file image loader / floppy generator

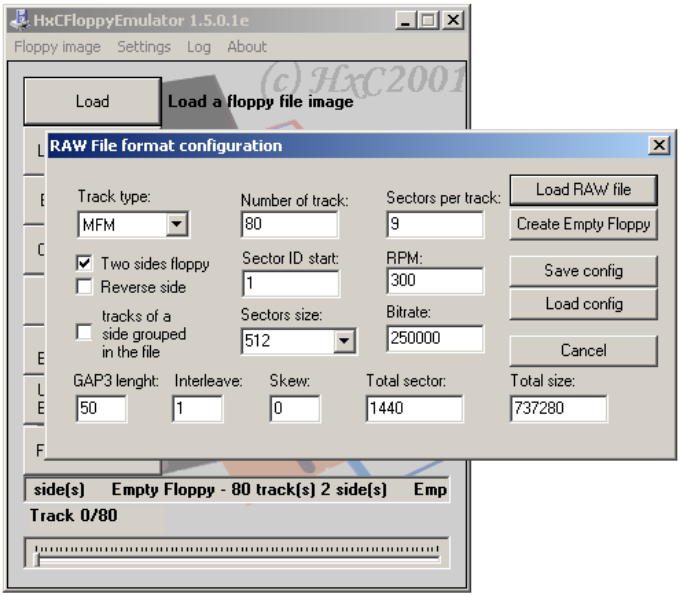


Figure 16 : RAW File loader window

This window allows you to specify a custom floppy disk format and load a raw file using your setting. You can also generate/format a virtual floppy according to your setting with the "Create Empty Floppy" button.

►Track type :	Specify the track format : MFM(DD) or FM (SD).
►Two sides floppy :	If checked 2 sides (DS), otherwise 1 one side floppy (SS).
►Reverse side :	Exchange side 0 and side 1.
►Track of a side grouped in the file :	If checked the first half part of the file contain side 0 track only, and the other half part side 1 track.
►Number of track :	Specify the number of track on the floppy disk.
►Sector per track :	Specify the number of sector on a track.
►Sector size :	Specify the sector size.
►Sector ID start :	Specify the starting sector ID (commonly set to 1).
►GAP3 length :	Specify the GAP3/inter sector gap length.
►Interleave :	Specify the sectors interleave.
►Skew :	Specify the tracks skew.
►Bitrate :	Specify bitrate of the floppy disk (common values are : 250000, 300000, 500000…).
►RPM :	Specify the disk rotation speed (common values are : 300, 360).

"Load" and "Create" buttons may appear grey if you have specify a track format which doesn't fit into the actual track size. The track size is computed with the RPM and bitrate parameters. In this case try to reduce the GAP3 value or correct your settings.

4.4 Floppy dump feature

This function allows you to read real floppy disks to use their images on the SDCard HxC Floppy Emulator. This tool is able to read most of ISO/IBM MFM(DD/HD) or FM (SD) floppy disk.

To be able to use this function your PC must be equipped with the right floppy disk drive (8" 5"1/4 or 3"1/2) connected to the motherboard. USB floppy disk drives are not supported.

This tool uses fdrawcmd for Windows developed by Simon Owen. You can download the lastest version of this driver on this site : http://simonowen.com/fdrawcmd

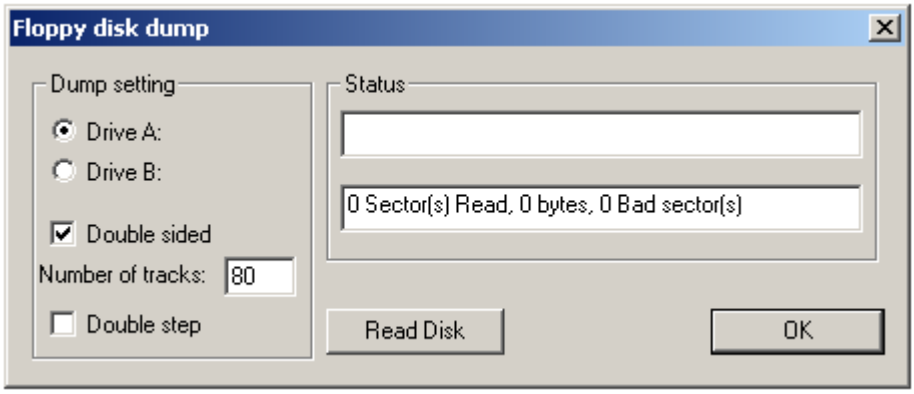


Figure 17 : The floppy dump window

The dump settings depend on the disk type you need to dump. Below you will find some safe settings:

Floppy Disk Drive model	Safe track setting
1.44MB/720KB 3"1/2	80 tracks and 2 sides.
1.2MB 5"1/4	80 tracks and 2 sides.
360KB 5"1/4	40 tracks and 2 sides.
8"	77 tracks and 2 sides.

During reading, for each track, its format (encoding mode/bitrate, number of sector, sector layout…) is automatically determined by the tool and displayed in the status field.
Once done the image of the floppy is loaded on the main window. You have to export it into HFE to use it on the emulator.

Note: The default floppy interface mode of dumped floppy disk is set to <<Generic Shugart>>. If the targeted system use another floppy interface mode (PC for example) don't forget to change this setting in the SDCard HxC Floppy Emulator settings (more details on page 19) before exporting the floppy image.

Caution: Be careful with the Number of track setting ! A too high value may damage the floppy disk drive during reading.

Note: If you are reading an 5"1/4 360KB floppy disk on an 5"1/4 1.2MB disk drive, set the Double step feature and set the number of tracks to 40.

4.5 File system based floppy generator.

The HxC Floppy Emulator software is able to generate a virtual floppy disk based on a files system. This feature allows you to generate a MS DOS or AmigaDos floppy disk containing your files.

To generate a FAT12 floppy disk, click on the “Create FS Floppy” button and choose the target floppy format (Example : 3”5 1.44MB MSDOS floppy).

Then click on the “Inject director” button and select the folder containing the floppy files / directory tree.

Once done you have just to export the created floppy image into HFE file and copy it to the SDCard.

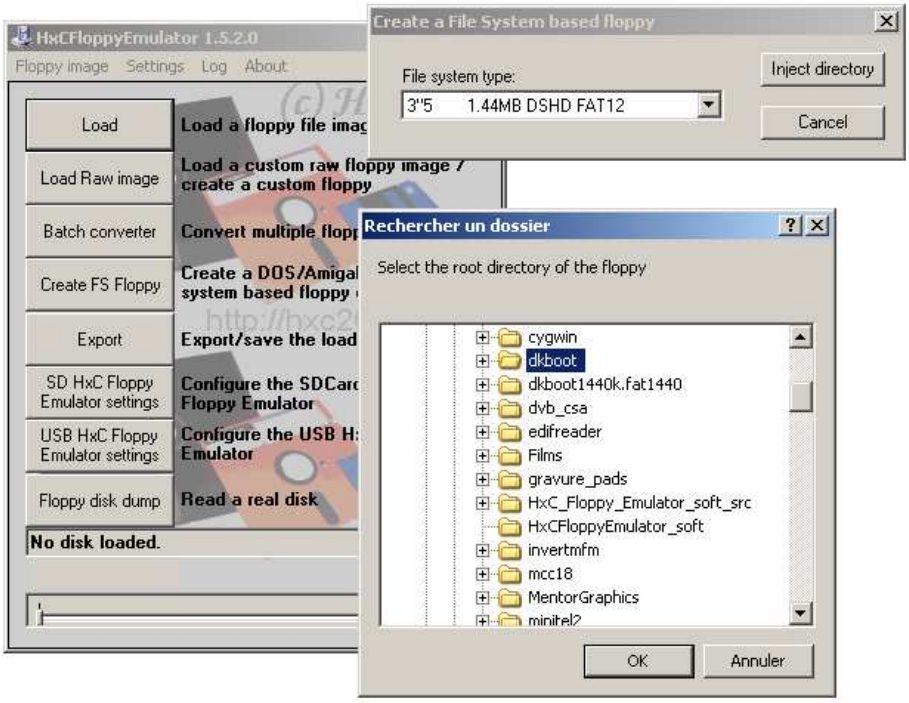


Figure 18 : Create a File system based floppy window

Note: By adding an extension to the name of the folder you can generate the floppy disk by a drag & drop of the folder on the HxC Floppy Emulator software window.
For example if you drag and drop a folder with the name “myfloppydisk.fat1440”, a 1.44MB MS DOS floppy is generated.

5 SDCard HxC Floppy Emulator file selector software

The SDCard HxC Floppy Emulator file selector software is a tool running on the host computer. This tool allows you to select floppy file image directly on the host computer keyboard and screen. In this case the LCD is optional, and only one push button is needed.
This tool is actually available on Amiga, Atari and Amstrad CPC platform.

To use this tool, copy the AUTOBOOT.HFE to the root of the SDCard and set the "Enable auto boot mode" feature (page 19 for more details).
The last version of the tool can be downloaded on the project website : http://hxc2001.free.fr/floppy_drive_emulator/index.html#download

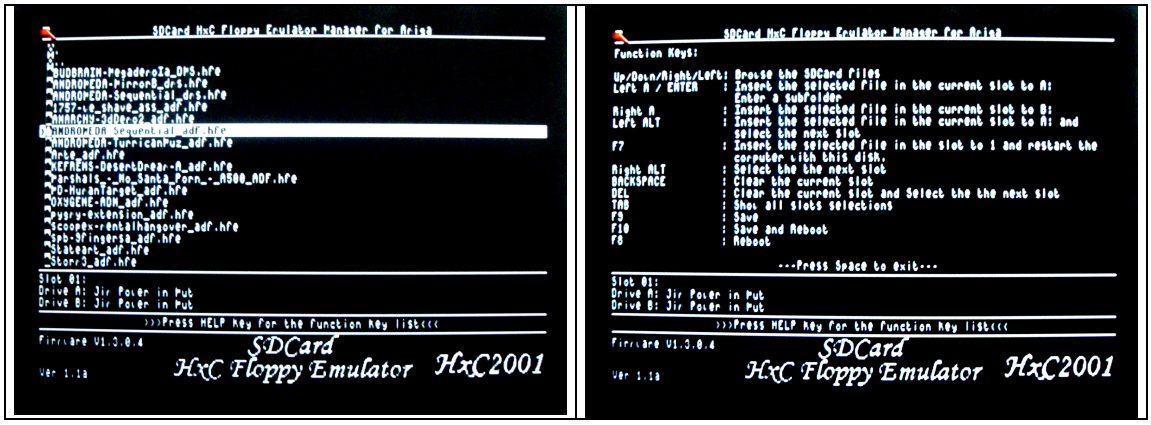


Figure 19 : File image selector main page and help page (Amiga version)

Once started you can see and browse the content of the SDCard.
To get the help page, press the key “HELP”.

Basically you can select a file image and reboot with it, or make a “slot list” with multiple disk.

Once rebooted, the floppy disk emulator buttons meaning change to:
Button ⏮ : Previous Slot.
Button ⏭ : Next Slot
Button ⏫ : Select first slot (AUTOBOOT.HFE)

Each time another image is selected the slot number is indicated by the buzzer and the SD access LED.

Note : If you press any button more than 1s, the first slot/selector software is selected. In this case only one push button is needed.

6 SDCard HxC Floppy Emulator firmware update

SDCard HxC Floppy Emulator Update procedure :

►Download the last firmware version:
http://hxc2001.free.fr/floppy_drive_emulator/SDCard_HxCFloppyEmulator_firmware.zip

►Copy the new firmware file (*.upd) to a freshly formated FAT32 SDCard.
►Insert the SDCard into the emulator.
►Press Left and Right buttons before power up and keep it pressed at least 1 seconds at power up.
►Wait some seconds .... its done !

Note 1:
The file must be unfragmented on the SDCard and must be in the first part of the root directory.
For these reasons it is recommended to use a freshly formatted FAT32 SDCard, otherwise you may get the error 4 or 6 (see note 2).

Note 2:
Bootstrap LED error messages:
Error 1 : (blink 1 time and 2 seconds pause cycle) No entry point (->no software flashed)
Error 2 : (blink 2 time and 2 seconds pause cycle) SDCard init error.
Error 3 : (blink 3 time and 2 seconds pause cycle) FAT error.
Error 4 : (blink 4 time and 2 seconds pause cycle) UPD File not found!
Error 5 : (blink 5 time and 2 seconds pause cycle) Bad UPD File header! (bad file)
Error 6 : (blink 6 time and 2 seconds pause cycle) Bad data CRC! (file corrupted)
Error 7 : (blink 7 time and 2 seconds pause cycle) Bad data size!
Error 8 : (blink 8 time and 2 seconds pause cycle) Write error (Pic flash error)

7 Technical details

7.1 Floppy interface

- HE10 34 pins floppy connector
- Shugart compatible mode supported.
- PC compatible mode supported.
- 24mA driving capability.
- Two floppy disk drives emulation.
- 300 RPM , 360 RPM supported (others RPM possible).
- Up to 255 tracks
- Up to 2 Sides

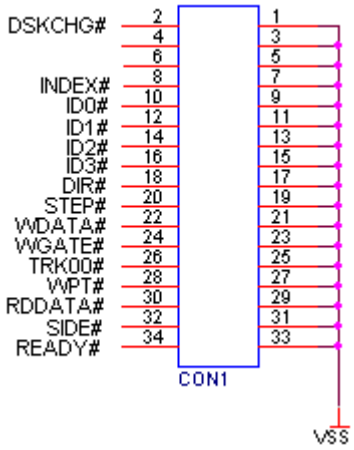


Figure 20 : Floppy connector pinout

7.2 Power supply

- 5V +/- 10% standard power floppy connector input.
- 500mA max current consumption. (Standby :100mA, RD/WR:170mA min – 450mA max. depend on the SDCard)

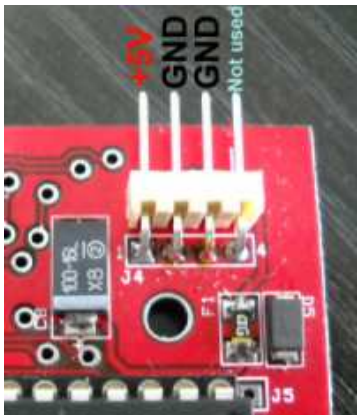


Figure 21 : Power connector pinout

7.3 User Interface

- 3 LEDs:
  - Power LED
  - Floppy access LED
  - SDCard access LED
- 3 buttons ("Previous","Select/Eject","Next").
- 1 audio transducer (Head Step and User interface sound).
- Detachable 2*16 chars Alphanumerical LCD.
  (**Note** : LCD and buttons can be put on an external front panel)
- On screen display software for Amiga, Atari ST and Amstrad CPC computer.

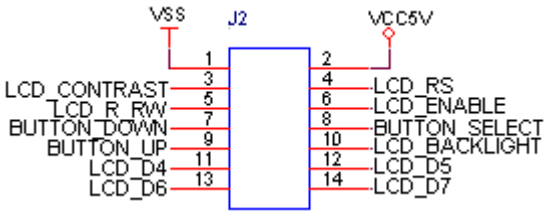


Figure 22 : Front panel connector pinout

7.4 SDCard support

- SD Card p to 2GB.
- SDHC Card supported up to 32GB.
  (10Mhz SPI bus mode. Average byte rate: ~500KB/s)

7.5 SDCard Filesystem

- FAT32 supported. Subdirectory and long name file supported.

7.6 Read / Write support

Track mode based floppy emulator (Full track pre-encoded in the HFE image file)

- Read support:
  - Most of existing formats (FM/MFM/Amiga track...) supported.
  - Custom tracks supported.
- Write support:
  - ISO MFM (DD) 256 Bytes-sector
  - ISO MFM (DD) 512 Bytes-sector
  - ISO MFM (DD) 1024 Bytes-sector
  - ISO FM (SD) 128 Bytes-sector
  - ISO FM (SD) 256 Bytes-sector
  - ISO FM (SD) 512 Bytes-sector

- ISO FM (SD) 1024 Bytes-sector
- Amiga track write support (since the PCB revision C)
- E-mu track write support (since the PCB revision C)

7.7 Floppy bitrate supported

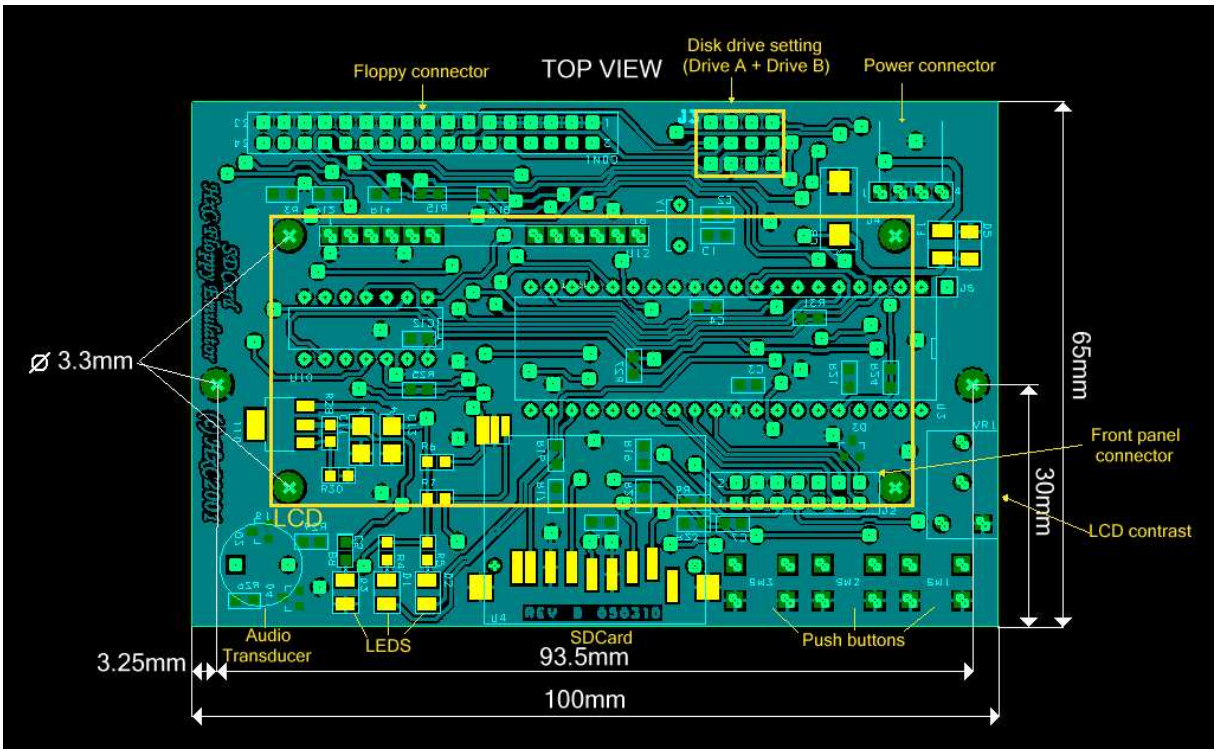
- 250/300Kbits/s (SD/DD floppies)
- 500Kbits/s (HD floppies)
  (others bit rates possible)

Note : Variable bit rate not supported for the moment. So protected floppy disk image (IPF and STX file format) file support is only partial ! If you look for a device supporting IPF / STX please a have a look to the [USB HxC Floppy Emulator device](#).

7.8 Additional features

- Firmware update via the SDCard.
- Last Loaded Floppy Image autostart at power up.
- Fast floppy image loading (<<1second), no conversion time.
- SDCard Direct Access mode : Floppy to SD bridging.

7.9 Mechanical drawing



7.10 Supported file format / Input

File format / Input	Target	Notes
*.ADF	Amiga computers	
*.ADZ	Amiga computers	
*.AFI	Multiplatform	HxC Floppy Emulator file format
*.DSK (CopyQM)	Multiplatform	
*.DSK (CPC DSK)	Amstrad CPC computers	
*.DSK (MSX DSK)	MSX computers	
*.DSK (Oric DSK)	Oric computers	MicroDisc or compatible FDC needed
*.DSK (TI99 DSK)	TI99/4A computers	
*.D88	NEC PC88/PC98	
*.DIM	Atari ST computers	
*.DMS	Amiga computers	
*.DPX	Oberheim DPX	
*.EDE	Ensoniq EPS/ SQ-80/VFX-SD	
*.EM1	Emax	
*.EM2	Emax II	
*.EMX	Emax I/II	Operating system image
*.EMUFD	E-mu emulator	
*.EMUIIFD	E-mu emulator II	
*.EII	E-mu emulator II	
*.SP1200FD	E-mu SP1200	
*.EDM	Ensoniq Mirage	
*.FD	Thomson TO8D	
*.HDM	X68000	
*.HFE	Multiplatform	SD HxC Floppy Emulator file format
*.IMD	Multiplatform	
*.IMG	PC / Multiplatform	
*.IMG	Prophet 2000/2002	
*.IPF	Multiplatform	Need CAPSImg.dll
*.JV1	TRS-80	
*.JV3	TRS-80	
*.JVC	TRS-80 CoCo	
*.MFM	Multiplatform	HxC Floppy Emulator file format
*.MGT	Sam Coupé	
*.SAD	Sam Coupé	
*.MSA	Atari ST computers	
*.SAP	Thomson TO8D	
*.SCL	ZX Spectrum	
*.SMC	SNES / Super Famicom	Generate a FAT12 floppy
*.ST	Atari ST computers	
*.STT	Atari ST computers	STEem file format

*.STX	Atari ST computers	Pasti file format
*.TD0	Multiplatform	Teledisk file format
*.TRD	ZX Spectrum	
*.VDK	Dragon 64	
FAT12 file system generator	Multiplatform: PC – Keyboards/Samplers – CNC machines.	More details on the page 22
RAW floppy loader/generator.	Multiplatform. Allow you to generate a custom floppy format	More details on the page 20
Floppy reader	Multiplatform. Allow you to read a real floppy disk.	More details on the page 21

Note : This list is subject to change since new files format support are regularly added.
If you want a particular file format support don't hesitate to contact us (contact informations on page 31).

7.11 Tested Target list

Some examples of host working with the SDCard HxC Floppy Emulator.

Note: This list is not complete since the SDCard HxC Floppy Emulator should works with any host having a Shugart/IBM PC floppy interface.

	Target	Support	Notes
Computers	Atari STE	[RD][WR][HCP]	
	Atari Mega STE	[RD][WR][HCP]	
	Atari STF	[RD][WR][HCP]	
	Atari Falcon	[RD][WR][HCP]	
	Amiga 500	[RD][WR][HCP]	
	Amiga 600	[RD][WR][HCP]	
	Amiga 1200	[RD][WR][HCP]	
	Amiga 2000	[RD][WR][HCP]	
	Amstrad CPC6128	[RD][WR][HCP]	
	Amstrad CPC6128+	[RD][WR][HCP]	
	Amstrad CPC464 +DDI	[RD][WR][HCP]	
	MSX2	[RD][WR]	
	Robotron KC 85/X	[RD][WR]	
	Kaypro 4-84	[RD][WR]	
	Super Wildcard DX-SWC3201	[RD][WR]	
	TI99/4A	[RD][WR]	
	NEC PC88	[RD][WR]	
	Thomson TO8D	[RD][WR]	
	IBM PC Compatible	[RD][WR]	
	X68000	[RD][WR]	
	TRS-80	[RD][WR]	
	Sam Coupé	[RD][WR]	
	ZX Spectrum	[RD][WR]	
	Dragon 64	[RD][WR]	
	ACT/Apricot	[RD][WR]	
	PERKIN-ELMER MODEL3030	[RD][WR]	
Keyboard / Samplers	Ensoniq EPS	[RD][WR]	
	Ensoniq Mirage	[RD][WR]	
	Emax	[RD][WR]	
	Emax II	[RD][WR]	
	E-mu emulator	[RD][WR]	
	E-mu emulator II	[RD][WR]	
	Oberheim DPX1	[RD][WR]	
	Korg DSS-1	[RD][WR]	
	Yamaha Clavinova CVP-83S	[RD][WR]	
	Prophet 2000	[RD][WR]	
	Roland S-50	[RD][WR]	
	Prophet 2000	[RD][WR]	
	Roland S-50	[RD][WR]	

7.12 Contact / Project page

The Software and Firmware are regularly updated to add new features and correct bugs.
To get the latest version of the software and firmware please visit the project website:

http://hxc2001.com

To report problems and/or bugs please go to the project forum :

http://www.torlus.com/floppy/forum

or contact us at this email:

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