

Informations about the „uSTARTCart64“ Board

(Final Prototype)

Last Changes

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1 The uSTARTCart64

With this new C64 cartridge you can start a lot of C64 files on your C64. Among them files like: CRT, PRG, P00, T64, D64, TAP, SID, KOA, KLA. D64 files can be opened like a directory and a PRG can be selected/started in it. For CRT files the following formats are supported: 8K, 16K, Ultimax, Ocean 32/64K, Magic Desk 64K [PRG->CRT], Super Zaxxon, Epyx FastLoad. Over time, one or two other formats will certainly be added.

The special feature of this cartridge, however, is the direct TAPE file support with the datasette interface, through which the TAP files can be transferred.

The functions are rounded off by a graphically appealing menu design with its sorted directories at the top, and the files arranged in colors and images underneath.

The cartridge is suitable for PAL and NTSC.

2 The Navigation

The menu is navigated through with the cursor keys. A folder is opened with the Return key. The Return key starts or opens the selected file.

D64 files behave like folders. If a D64 file is selected/opened, all programs contained in it are listed, which in turn can be selected/loaded/opened/started.

You can get back with the "INST/DEL" key.

The root directory is reached with the "CLR/HOME" key.



3 The „Special“ Button

The Special Button has several functions.

- **Autostart:** within the menu it can be used to activate or deactivate the autostart after a C64 power on (last C64 file will start after Power On). The current status is displayed in the upper right corner of the menu (AUTO: ON/OFF).
- **Game Pause:** during a game the game can be paused with the **Special Button**. If the button is pressed again, the game will be continued.
- **Directory Update:** Inside the directories with many files (>250) a DIR.TXT is created to display the files faster when the directory is called again. Sometimes it is necessary to update the directory. If the **Special Button** is pressed for more than 2 seconds, the DIR.TXT is created again and the directory is displayed again.

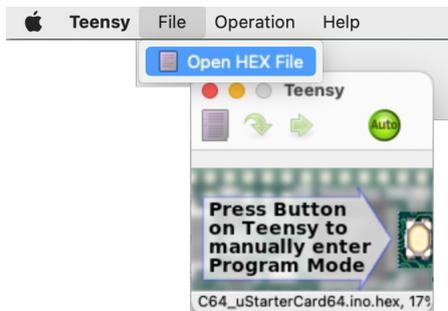
Note: due to memory limitation, max. 750 files are allowed in each directory. Therefore the files should be distributed to several directories if there are more than 750 files on the SD card. This is also useful to avoid having to scroll endlessly through thousands of files.

4 Transfer the firmware

To transfer the firmware (HEX file) the Teensy Loader is used, which is available for all common operating systems (MacOS, Linux, Windows):

<https://www.pjrc.com/teensy/loader.html>

Via the tab "File" and the selection "Open HEX File" the HEX file is loaded.



Now connect the Teensy to the computer via USB and press the reset button.

5 Transmit/Test PRG or CRT Files with USB

With uSTARTCard64 files compiled by a compiler on a PC can be easily sent to a C64 via a serial USB connection and started there immediately. This allows a very comfortable realtime software development on the C64.

How must the files be transferred?

For transmission the main menu of the uStartCard64 must be called ("Menu" button press)

First 2 detection bytes:

0x25, 0x17

... then another byte:

0x15 (CRT) or

0x16 (PRG)

... then follow 4 bytes with the file length (32-bit, MSB ... LSB):

Example: File length = 35019 bytes

0x00,0x00,0x88,0xCB

Finally the file bytes follow:

...

6 Loading TAPE Files

The uSTARTCart64 enables the loading of TAPE files. To ensure a continuous data stream, a very fast SDCard with low latency is required. For example the SanDisk Ultra 16GB. If loading errors occur, another SDCard should be tried first.