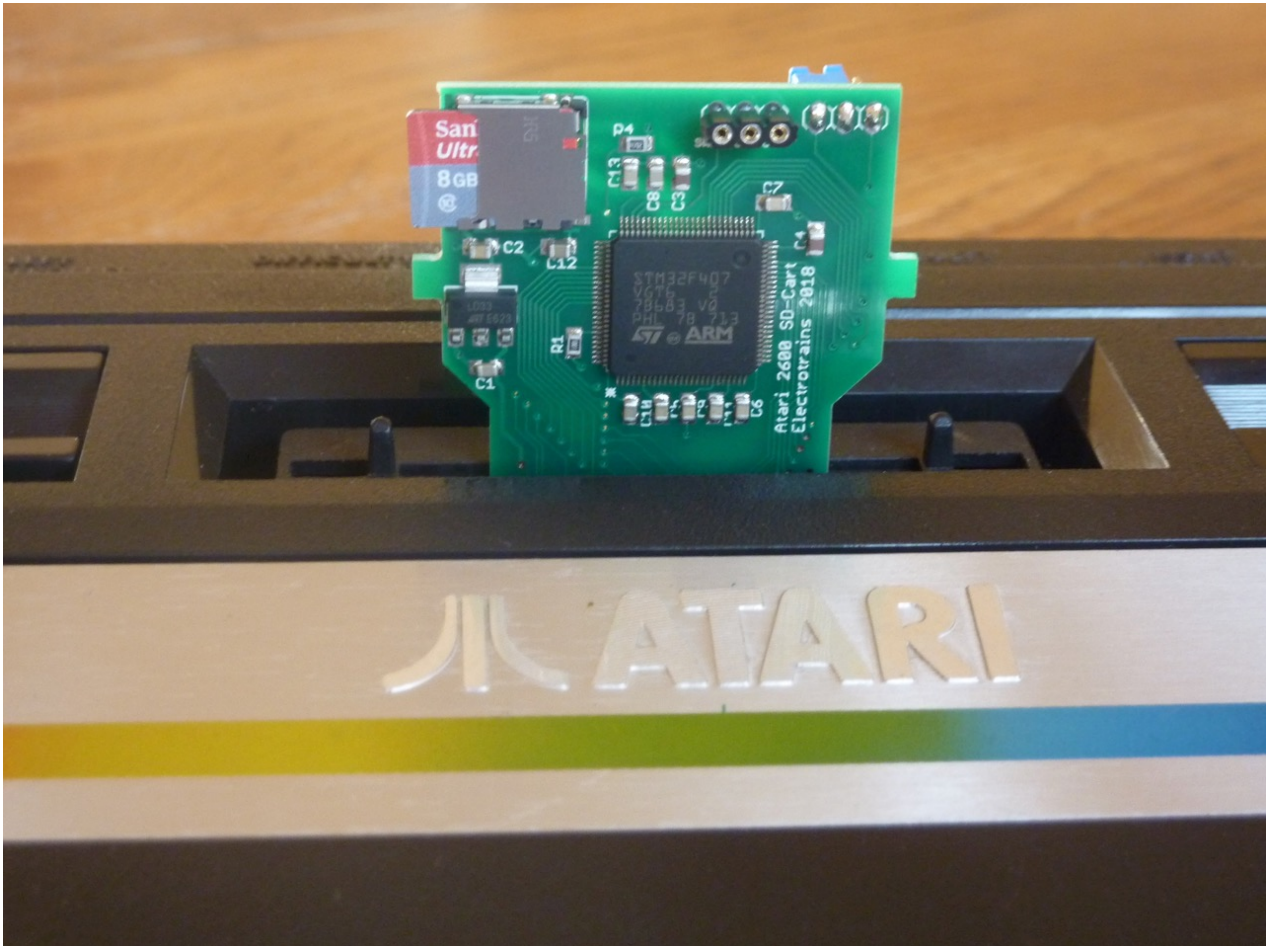# UNOCART-2600

Instruction Manual

Revision 1.4 21/3/2018

Atari 2600 SD multi-cart

Quick Start

The UnoCart -2600 is an Atari cartridge emulator. It supports cartridges with up to 64k of ROM and 32k of RAM. First, copy BIN, ROM or A26 files to an SD card and insert it into the cartridge. Check the TV configuration jumper on the back of the board matches your TV system. Insert the cartridge in the Atari 2600. If the board is uncased, check you've got it the right way round (see picture). Power on the Atari and use the joystick to choose an item and the fire button to start it.

PAL/NTSC Configuration

The jumper on the back of the board allows you to select whether the cartridge uses NTSC or PAL/PAL60 for the built-in menu. You can remove the jumper completely if you are using a NTSC TV.

Note that this jumper only applies to the cartridge menu (and also to the Supercharger BIOS if you are using a Supercharger cartridge type). Once you select a ROM to emulate, the TV picture produced will be entirely dependent on the cartridge being emulated. In general there were separate PAL and NTSC versions of each cartridge – make sure you get the correct version.

SD Cards

SD cards should be formatted as FAT32. Newer SD cards may come formatted as exFAT. These can be used with the UnoCart-2600, but need to be re-formatted as FAT32 on your computer prior to use. Note that the UnoCart-2600 firmware will only show up to 80 items per directory. You can use directories to organise your files.

Menu

The menu allows you to navigate the files on the card and select a title to use. Joystick up and down will move through the items one at a time. You can also use joystick left and right to move to the previous or next page. Press fire to select an item. You can also use the SELECT button on the console to move to the next item, and RESET to select an item, if you don't have a joystick plugged in.

Compatibility

The UnoCart-2600 should be able to emulate every cartridge released during the commercial life of the 2600. Newer homebrew titles should also be compatible with the UnoCart-2600, unless they use the DPC+ co-processor features specific to the Harmony/Melody cartridge. Note that the DPC support on the cartridge is not complete but it is sufficient to play Pitfall II.

Arcadia/Starpath Supercharger titles are emulated with the multi-load parts combined in a single file. Up to 256 loads are supported (2MB file). The Supercharger BIOS will use the TV type set by the UnoCart-2600 TV jumper.
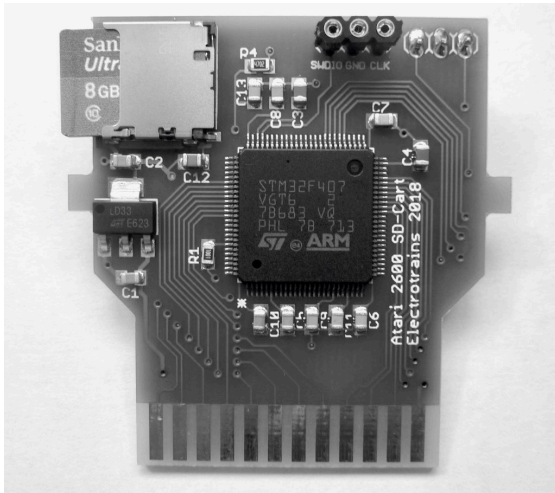
ROM Files

The UnoCart uses cartridge detection signatures from the Stella Atari 2600 emulator to auto-detect all common cartridge types. If a file has an extension of .BIN, .ROM or .A26 it will be auto-detected. If you want to force the cartridge to be emulated as a specific type, you can use the file extensions listed in the table below.

Cartridge Type	ROM	RAM	File Extension
2K	2K		.2K
4K	4K		.4K
F8	8K		.F8
F8 SC	8K	128 bytes	.F8S
F6	16K		.F6
F6 SC	16K	128 bytes	.F6S
F4	32K		.F4
F4 SC	32K	128 bytes	.F4S
FE (Activision)	8K		.FE
3F (Tigervision)	<=64K		.3F
3E	<=64K	<=32K	.3E
E0 (Parker Bros)	8K		.E0
0840	8K		.084
CV (CommaVid)	2K	1K	.CV
EF	64K		.EF
EF SC	64K	128 bytes	.EFS
F0	64K		.F0
FA (CBS RAM Plus)	12K	256 bytes	.FA
E7 (M-Network)	16K	2K	.E7
DPC (Pitfall II)	8K+2K		.DPC
Supercharger	256 loads		.AR

Firmware re-programming (advanced)

The board can be re-programmed using an ST-Link device. The programming header is at the top of the board. First connect the 3 pins to the equivalent pins on your ST-Link. You should then connect the ST-Link device to the USB port of your computer. You will also need to power the board – the easiest way to do this is to plug the board into your Atari 2600 and power on. The ST-Link software should then be able to connect to the STM32F407 and re-program the firmware.

The latest firmware is available on the project website: https://github.com/robinhedwards/UnoCart-2600

Pin	SWD	Function
1	SWDIO	SWD I/O
2	GND	GND
3	SWCLK	SWD Clock

Microcontroller (advanced)

The UnoCart-2600 will be fitted with either a STM32F407VGT6 (1meg flash) or a STM32F407VET6 (512k flash) microcontroller. Please refer to your PCB to determine which one is present on your device. If you are developing new firmware for the cartridge, the table below shows the pins connected to the cartridge port & micro SD card slot.

STM32 Pin(s)	Cartridge Port	STM32 Pin(s)	Function
PD0…12	A0…A12	PB5	MicroSD CS
PE8…15	D0…D7	PB13 (SPI2,2)	MicroSD CLK
PC0	TV Jumper	PB14 (SPI2,2)	MicroSD DO
PC1	TV Jumper	PB15 (SPI2,2)	MicroSD DI

Credits

Original idea, hardware and firmware by Robin Edwards (electrotrains at atariage).

Additional cartridge support and firmware additions by Christian Speckner (DirtyHairy at atariage).