

# C2M Reader Manual

"C2M Reader" is a special set of files and firmware for converting a normal C2M device into a C2M Reader device. A normal C2M device only works with a S/NES Mini. A C2M Reader device works with almost anything.

Note: This requires a USB-A Male to USB-A Male cable that was not included in the original C2M box. Look on the C2M website for links to buy these cables separately: <http://classic2magic.com/>

A C2M Reader device appears to the host system to be a USB drive aka a "Mass Storage Device". This means that you can access a SNES gamecart with anything that you can plug a USB drive into! Think about that for a second. This is huge!

## WARNINGS

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- Do not power off or unplug the C2M during first boot/install.
- Do not remove the USB drive from C2M during first boot/install.
- Do not remove the USB drive from C2M while the C2M green "status" LED is blinking.
- If using a USB hard drive it needs to be a self powered drive. This means it needs it's own separate power connection, and so does not expect to be powered over USB.
- Always perform a safe eject before unplugging a USB drive from your computer.
- Do not blow in gamecarts, clean with alcohol instead.

## Prepare the USB Drive

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1. Format a USB drive as FAT32
2. Go to the Downloads page on the <http://classic2magic.com/> website and download the "C2M Reader Setup Files".
3. Extract the "C2M Reader Setup Files" into the root of your USB drive.
4. Perform a safe eject of the USB drive from your computer, then unplug it.

## Connection setup

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1. Insert the prepared USB drive into the **top** of the C2M Reader. **It is important to do this step before plugging in the cable!**
2. Plug one end of the special USB-A Male to USB-A Male cable into the **back** of the C2M Reader.
3. Plug the other end of the cable into your host device. This can be a PC, Raspberry Pi, Games console, etc.

Note: The micro USB socket on the back of the C2M device is not used in C2M Reader mode. So do not connect anything to it.



(USB-A Male to USB-A Male cable)

## Change to C2M Reader mode

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The change to C2M Reader mode will take about 10 seconds and only needs to be done once.

1. Format your USB drive as FAT32. (Right click on the USB drive in Windows Explorer and select Format, then ensure that the filesystem is FAT32.)
2. Download and extract all the "C2M Reader Setup Files" into the root of your USB drive.
3. Perform a safe eject of the USB drive from your computer, then unplug the USB drive from your computer. (Right click on the drive in Windows Explorer and select Eject to perform a safe eject.)
4. Unplug all USB cables from the C2M device so that it is powered off.
5. Insert the USB drive into the top of the C2M device.
6. Power on the C2M device by plugging one end of the USB-A Male to USB-A Male cable into the socket at the back of the C2M device, and the other end into a PC or other host.
7. The green C2M status LED will flash for 1-5 seconds while it starts up and changes into C2M Reader mode. Once it stops flashing the changeover to C2M Reader mode should be complete. It will then stay in this mode permanently until you change it back using the "C2M Reader Revert Files" package.

## Revert to C2M normal mode

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To revert back to normal C2M mode use the "C2M Reader Revert Files" package from the C2M website <http://classic2magic.com/>

Note: When changing back to normal C2M mode you do not need to do a first time install again on any S/NES Mini consoles you use it with.

1. Format your USB drive as FAT32. (Right click on the USB drive in Windows Explorer and select Format, then ensure that the filesystem is FAT32.)
2. Download and extract all the "C2M Setup Files" files into the root of your USB drive.
3. Download and extract all the "C2M Reader Revert Files" into the root of your USB drive.
4. Perform a safe eject of the USB drive from your computer, then unplug the USB drive from your computer. (Right click on the drive in Windows Explorer and select Eject to perform a safe eject.)
5. Unplug all USB cables from the C2M device so that it is powered off.
6. Insert the USB drive into the top of the C2M device.
7. Power on the C2M by plugging in the micro USB power cable at the back.
8. The green C2M status LED will flash for 1-5 seconds while it starts up and changes into normal C2M mode. Once it stops flashing the changeover to normal C2M mode should be complete. It will then stay in this mode permanently until you change it back using the "C2M Reader Setup Files" package.

## Playing games from gamecarts

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1. Ensure a FAT32 formatted USB drive is inserted into the top of the C2M.
2. Insert gamecart into the gamecart slot on the top of the C2M.
3. Once the gamecart and USB drive are present, the C2M will start caching the gamecart contents onto the USB drive. The green status LED on the top of the C2M will flash during the caching process. The first time a game is cached it will take 5-10 seconds. Subsequent times will take 1 second. When the green LED stops flashing the caching is complete and the C2M Reader will appear as a USB drive plugged into your PC/host. You can proceed with the next step.
4. Start your chosen emulator and run the currently inserted gamecart rom from the C2M Reader device.  
Note: The "C2M Reader Setup Files" that you copy onto your USB drive contain custom snes9x builds for using C2M Reader with Windows and Linux. Check the file "how\_to\_run\_snes9x\_for\_c2m\_reader.txt" in the root of your USB drive for more info about using them.

## Preventing a corrupted USB drive

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If a USB drive is removed while it is being used then the files on it can become corrupted. It is not always obvious that the USB drive is still in use. Even when it looks like files have finished copying onto the USB drive, they might still not be written to disk fully. In order to prevent corruption of the files on a USB drive you should always do the following:

- Perform a safe eject of the USB drive before unplugging it from your computer or host device. (Right click on the drive in Windows Explorer and select Eject to perform a safe eject.)
- Do not remove the USB drive from C2M while the green status LED is flashing, such as when caching a game.

## Fixing a corrupted USB drive

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If a USB drive has become corrupted then you can fix it fairly easily by inserting it into a Windows computer and opening Windows Explorer. (Press the Windows key, then type "explorer" and press Enter.) Now look in the list of drives for the USB drive that is corrupted and right click on it and select "Properties". Now go to the "Tools" tab and click on the "Check" button under the "Error checking" heading. Windows may say that you don't need to scan this drive, however sometimes it is wrong. So select "Scan and repair drive" to start the scan. This could take a fairly long time depending on the size of your USB drive. An 8GB drive might take around 20 minutes for example. If your drive is corrupted, or you suspect it might be corrupted this is worth doing.

## Fixing gamecarts that are having trouble being accessed

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Due to the gamecarts being fairly old, their connections may have become dirty or tarnished and so give issues when attempting to play them.

*DO NOT* blow on or in gamecarts in an attempt to fix them! This just makes them worse.

Instead use alcohol such as isopropyl alcohol or methylated spirits etc on a cotton tip and rub all of the the gamecart contacts until no more dirt comes off any of them. Allow it to dry off for 10 seconds or until it no longer looks wet, then insert it into the C2M and try again. You can also use electronics cleaner instead of alcohol if you have some.

## C2M Reader Technical Details

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Note: It is important to note that C2M Reader will work most host devices (PCs, Raspberry Pis, games consoles, etc) as long as they have the ability to read read USB drives. They do not require any special C2M support.

The C2M Reader works by reading out the ROM (read only) contents of a gamecart and then writing it onto the connected USB drive. It then makes this USB drive accessible over a USB connection as a USB Mass Storage Device (ie a normal USB drive) to anything that the C2M Reader is plugged into.

This means that anything that can access a USB drive can access the gamecart via the C2M Reader! A USB drive (or Mass Storage Device) is a USB standard, so it should be accessible by anything that supports USB devices! :)

The C2M Reader device will not "appear" to be plugged in to the host device until it has successfully copied out a connected snes gamecart to a rom file on the USB drive. This means that if there are any errors, or if a gamecart is not connected, or if a USB drive is not connected, it will not appear. In which case try the error mitigations such as checking cable connections, checking USB drive and cleaning SNES gamecart pins.

Once the C2M Reader appears as plugged in to the host device there will be a text file that shows where to find the rom file for the currently inserted SNES gamecart. This text file helps speed up load times by pointing to any preexisting copied out rom file without having to do a full copy out every time.

Custom software on the host, such as an emulator or auto-insert script, can parse this very simple text file to provide automated support for loading gamecarts from the C2M Reader. If no custom software is available then the user can support the C2M Reader by following the same steps manually.

To support the C2M Reader you need to access `c2m/cartdumps/current.txt` in the root of the USB drive. This file contains the string filepath location of the current snes rom file. This file contains directory separators in the '/' linux/mac format, not the '\' windows format. Filepaths are from the root of the USB drive itself. An example of a real file is:

```
c2m/cartdumps/snes/D3320796_SUPER_MARIOWORLD.sfc.
```

In Windows speak this would be:

```
X:\c2m\cartdumps\snes\D3320796_SUPER_MARIOWORLD.sfc.
```

In Linux speak this would be something like:

```
/media/c2m/cartdumps/snes/D3320796_SUPER_MARIOWORLD.sfc.
```

The contents of this file is a 1 line filepath to the relative current rom file (for the inserted gamecart).

There are no new-line characters or whitespaces.

There is no null terminator at the end of the file contents.

Custom software would therefore read out the contents of this file and do any necessary conversions to generate a real filepath. It would then run an emulator passing in the generated filepath in order to load and run that rom file. Example sourcecode for generating the filepath can be seen in "c2m.h" in the provided custom sourcecode for snes9x.

The custom version of snes9x provided for Windows and Linux supports 3 the following extra features to better integrate C2M Reader support:

- `File -> "Play C2M Game..."` menu item to start playing the currently inserted game cart.
- `Ctrl+P` shortcut key to start playing the currently inserted game cart.
- `-c2m` command line option to start playing the currently inserted game cart.

Alternatively a user could manually look at the file contents and then load the rom file into their emulator of choice and run it.

## Troubleshooting

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If you have any issues the first thing to try turn is turning it off and on again. To do this you unplug the USB-A male cable from the back of the C2M device, wait 5 seconds and then plug it back in again.

Some issues will result in an error code being displayed on the red "error LED" on the top of the C2M device. This will be a series of short and long flashes with a pause where no flashing occurs at the end of the series. This will be referred to in some of the issues below.

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### Red LED flashes after inserting gamecart

This means there was an issue reading the gamecart. Usually this is due to the contacts being dirty or tarnished.

Red LED flash codes that signify a gamecart issue are:

long, short, short

long, short, long

long, long, short

#### Fixes

- DO NOT BLOW ON CART!
  - Clean contacts with alcohol or electronics cleaner.
  - Try another cart
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### USB drive related Red LED flashes

The Red LED may flash to signify an issue with the USB drive. The USB drive related flash codes are described below:

#### long = No USB drive detected

##### Causes

- USB drive is not inserted
- USB drive is faulty
- USB drive isn't making good contact with socket

##### Fixes

- Insert USB drive
- Clean USB drive contacts
- Remove and reinsert USB drive
- Try another USB drive
- Turn C2M off and on again

#### long, short = Error mounting USB drive

##### Causes

- USB Drive is corrupt
- USB drive is unformatted
- USB drive is formatted with an unsupported filesystem
- USB drive or has dirty contacts

- USB drive is faulty

#### **Fixes**

- Run error check on USB drive filesystem
- Check USB drive is formatted as FAT32
- Clean USB drive contacts
- Remove and reinsert USB drive
- Try another USB drive
- Turn C2M off and on again

### **long, long = Error reading or writing to USB drive**

#### **Causes**

- USB drive is corrupt
- USB drive has dirty contacts
- USB drive is faulty
- USB drive was ejected while in use
- USB drive isn't making good contact with socket

#### **Fixes**

- Run error check on USB drive filesystem
  - Clean USB drive contacts
  - Remove and reinsert USB drive
  - Try another USB drive
  - Turn C2M off and on again
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### **C2M related Red LED flashes**

### **long, long, long = Current firmware is invalid or corrupted**

#### **Causes**

- Missing firmware
- Error during flashing of firmware

#### **Fixes**

- Put firmware file on USB drive, insert USB drive into C2M and power cycle C2M to reflash firmware onto C2M

### **long, short, short, short = Error updating firmware**

#### **Causes**

- Firmware file on USB drive is invalid
- Firmware file on USB drive is corrupt
- USB drive is corrupt

#### **Fixes**

- Check the correct firmware file is present on USB drive
  - Download a fresh copy of USB files pack containing firmware file and copy onto USB drive
  - Run error check on USB drive filesystem
  - Clean USB drive contacts
  - Remove and reinsert USB drive
  - Try another USB drive
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## **Misc USB related Red LED flashes**

**long, short, long, short = Error during USB enumeration**

### **Causes**

- Faulty USB cable
- Loose USB cable
- Faulty console
- Bad USB contacts/connection

### **Fixes**

- Unplug and Replug the C2M power cable
- Unplug and replug USB cable on both ends
- Try a new USB cable

**long, short, long, long = Error with USB host**

### **Causes**

- Faulty USB cable
- Loose USB cable
- Faulty console
- Bad USB contacts/connection

### **Fixes**

- Unplug and replug USB cable on both ends
- Try a new USB cable