Magic Lantern 0.2 for Canon 550D, firmware 1.0.9 Installation

http://magiclantern.wikia.com

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Installing Magic Lantern 0.2 for Canon 550D, Firmware 1.0.9

WARNING

```
************************************************
*                                              *
* THIS IS DANGEROUS AND MIGHT DAMAGE YOUR CAMERA. *
*  NO WARRANTIES.  NO GUARANTEES.  DO NOT TAUNT.  *
*                                              *
************************************************
```

If you are not comfortable with this, stop reading and delete the software before you are tempted to try running it on your camera.

To repeat this important point:

```
************************************************
*                                              *
* THIS IS DANGEROUS AND MIGHT DAMAGE YOUR CAMERA. *
*   IF IT BREAKS, YOU GET TO KEEP BOTH PIECES.    *
*                                              *
************************************************
```

Important notes

- If you have a bootable SD card and have the `DISKBOOT` flag set in the camera (which the installer does), and you do not have an `AUTOEXEC.BIN` file on the card the camera **WILL NOT BOOT!** It will hang and not wake up until the battery is removed.
- If you encounter a "locked up" camera, **quickly remove the battery**. Otherwise the ARM might be in a tight-loop and get very hot, very quickly. Your battery will run down and your LCD might show some discoloration.
- When in doubt, remove the battery and reboot.
- **And, remember that this software can damage or destroy your camera.**

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Introduction

There is 2 ways of running user code on the 550D/T2i/Kiss X4:

1. using the update process with a **.fir** file, which must be digitally signed.
2. using the bootdisk process: the **autoexec.bin** file is loaded and executed. This file does not have to be signed, but the bootdisk flag must be enabled in the camera.

To install Magic Lantern on your camera, you must download the right magiclantern for your firmware: 1.0.8 or 1.0.9. The recommended way is to upgrade your camera to 1.0.9 in order to get the latest features.

No development will be done on 1.0.8 any more. Magic Lantern does not work at all with earlier firmware versions.

Installing Magic Lantern for 550D firmware version 1.0.9 (current)

Make sure you have the Canon Firmware 1.0.9 first! Running Magic Lantern on an incorrect firmware version may brick your camera!

If you already use a previous version of Magic Lantern for 550D firmware **1.0.9**, it's easy. Download the latest ML and unzip everything on your SD card. Done. Enjoy!

If you already use Magic Lantern for 550D/1.0.8, format your card, upgrade camera firmware to 1.0.9 and follow the ML install steps.

Step 0. Downloading

- Download this release: magiclantern-0.2.0.rc1.550d.fw109.zip
- Read this discussion thread for more info.

Step 1. Enabling bootflag

- Format the SD card
- Copy `magiclantern.fir` from the zip archive on the SD card
- Launch the firmware update process. For this, start the camera and select `Firmware ver 1.0.9` from the `Wrench 3` menu (must be in manual or P mode to select)
- The installer (`magiclantern.fir`) will enable the bootdisk flag in NVRAM by calling the `bootdisk_enable()` function from Canon firmware.

  This is the **only** persistent change to your camera, which can be reverted.
- Once the drive light has gone off and stays off for a few seconds, remove the battery.

Step 2. Making the SD card bootable

The file `autoexec.bin` can be launched if the bootdisk is enabled AND the SD card is "prepared" with special values written in boot sector:

- for FAT16 cards: `EOS_DEVELOP` written at offset 43 and `BOOTDISK` at offset 64
- for FAT32 cards: `EOS_DEVELOP` written at offset 71 and `BOOTDISK` at offset 92

Linux and Mac OS X

You can use `make_bootable.sh`, which is included in the archive. You need to change the following line in order to indicate your SD card device:

```
# change this
dev=/dev/disk1s1
```

Then run the script with:

```
bash make_bootable.sh
```

Windows

You can use:

- **CardTricks** tool from CHDK, for cards smaller than 4 GB: here

- **bootCF** for larger cards: here

To run **bootCF**, either drag the card's icon from the `My Computer` screen onto the `BootCF.exe` icon, or run **bootCF** from command prompt.

You can verify whether the boot sector has been modified using HxD.

Step 3. The last one :)

Delete `magiclantern.fir` and copy `autoexec.bin`, `magic.cfg` and `*.bmp` files on your SDCard.

Switch on your camera, and Magic Lantern (`autoexec.bin`) will boot.

As long as you had enabled the `BOOTDISK` flag once, you card is "prepared"; the camera will try to load any `autoexec.bin`. The `.fir` file is not needed any more, unless for some reason you will want to retry the installation process.

Troubleshooting

- If Magic Lantern does not work (i.e. no new features are noticed), repeat Step 2. Also try with an older (FAT16) card.

* **Again, NEVER let a prepared card without a working autoexec.bin on it, remove the battery immediatly during 5 secs, switching off is not enough !!!**

Video instructions

- This video shows the firmware upgrade process using magiclantern.fir (how to enable the DISKBOOT flag). It is for Magic Lantern for 550D/1.0.8, but the proces is 90% the same for 1.0.9 (the latest version loads faster).
- This video shows how to prepare a bootable card and run a custom autoexec.bin. This video shows an unofficial build of Magic Lantern for 550D/1.0.8. The procedure for preparing the card is identical for 1.0.8 and 1.0.9.

Older versions (archived)

550D/1.0.9

- 3 Dec 2010: magiclantern-0.1.9-rc0_550d_fw109.zip

550D/1.0.8

No further development will be done on the 1.0.8 firmware.

Official builds from Trammell Hudson

- Announcing pre-alpha firmware
- RC1 release: magiclantern-550d.rc1.zip
- 8 Aug 2010: Update 550D beta, now with gain control

Unofficial (experimental) builds

- 11 Nov 2010: magiclantern for 550D, compiled with shorter config file
- 23 Nov 2010: Recording Internal and external audio simultaneously
- 07 Dec 2010: fixed cropmarks
- 09 Dec 2010: enabled zebras and histogram
- 11 Dec 2010: GUI menus & lots of extras
- 12 Dec 2010: enabled QScale and spotmeter

Risks

- This firmware does a (very small) (semi-)permanent change to your camera: it changes the `DISKBOOT` flag, which is stored in NVRAM. This change can be reverted (see the mailing list and bootflags.c).
- There are no confirmed reports of Magic Lantern doing permanent damage on the 550D. However, there are reports on the CHDK forums that some users bricked their 350D, most probably by installing a hack on the wrong firmware version. There are also lots of reports of camera refusing to boot after installing ML; this happens because they have tried to start the camera from a bootable (i.e. prepared) card without `autoexec.bin`. That's why you should read the install instructions carefully.
- The biggest risk is when experimenting with source code without knowing what you are doing. Calling certain functions or calling them at the wrong moment can be dangerous.
- Risks are low with pre-built binaries, since we test them on our cameras before making them public.
- Risks are minimal with official versions (from the main repo), since they get tested by many users before releasing them.

Source code

You can build your own `AUTOEXEC.BIN` files with the 550d branch of the source code:

```
hg clone -r 550d https://bitbucket.org/hudson/magic-lantern
```

There is **no** Canon source or object code in the Magic Lantern tree and we do **not** distribute ROM dumps since they contain code that is copyright by Canon. If you have the camera in hand, you can make your own dump for analysis and use this IDC database to add symbols to it.

If you want to compile your own `AUTOEXEC.BIN`, check the following wiki pages:

- For Developers
- Build instructions/550D
- 550d dev