

Marlin 2.0.7 for the Chiron

Introduction

I do not work for Anycubic and have no affiliation with Anycubic Ltd.

I have created this custom version of Marlin to support the factory build of the Anycubic Chiron, as I am a Chiron owner and a long-term user of Marlin firmware.

You are installing this firmware because you want to try new features in Marlin and you know how to safely operate your machine.

This firmware has been tested on the standard factory build Chiron and the printer operates as expected. This is open source firmware that comes with no support, warranty or guarantees. You have chosen to install it and by doing so accept responsibility for any problems, failures and losses that may occur.

If you aren't sure about upgrading firmware, then please don't.

The upgrade process is very simple and you can return to the Anycubic standard firmware at any time using the file in this package, or by downloading it from the Anycubic website.

Firmware Features

Here is a summary of the features enabled in the firmware

All Chiron hardware and front panel features are supported.

Bed Levelling

- Mesh bed Levelling
- Sensor Bed Probing
- Manual level adjustment
- Enhanced single point adjustment
- Automatic mesh loading after homing

Preset Calibration

- Stock Hotend PID tune profile
- Stock Heatbed PID tune profile
- Stock extruder E-Step Calibration

Error Recovery

- Filament out detection and recovery enabled
- Power loss detection and recovery enabled (SD Printing only)
- Auto park head on Pause
- Validated temperature error detection (reduces spurious temperature warnings)

Printing Features

- Marlin Linear Advance enabled (preset K=8.0)
- Marlin Junction Deviation (preset to 0.028)
- Live Z axis baby stepping movement from panel during print

Folder Navigation

The SD card can be navigated like a normal PC folder.

Click a folder name to enter a folder and click .. to go back up to the previous folder.

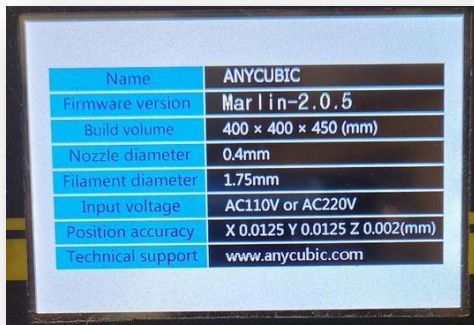
Which Version Chiron do I have?

There are newer factory builds of the Chiron with an updated TFT panel that works slightly differently.

THIS FIRMWARE DOES NOT SUPPORT THE NEW TFT PANEL (yet!)

Original version supported ✓

Use Anycubic firmware v1.3.0



Name	ANYCUBIC
Firmware version	Marlin-2.0.5
Build volume	400 x 400 x 450 (mm)
Nozzle diameter	0.4mm
Filament diameter	1.75mm
Input voltage	AC110V or AC220V
Position accuracy	X 0.0125 Y 0.0125 Z 0.002(mm)
Technical support	www.anycubic.com

New version Not Supported ✗

Use Anycubic Firmware v1.3.5



Return ↶	
Name	ANYCUBIC CHIRON
Firmware version	V1.3.5
Build volume	410x410x450(mm)
Nozzle diameter	0.4mm
Filament diameter	1.75mm
Input voltage	AC110V or AC220V
Position accuracy	X 0.0125 Y 0.0125 Z 0.002(mm)
Technical support	www.anycubic.com

If you have installed the v2.07 by mistake you can reinstall the original Anycubic firmware in the pack.

What's in the package?

The new Marlin Firmware

This is the version 2.0.7 release of Marlin customised for the Chiron and some command files to send to the printer. The printer will beep after running a command file.

File list

- CHIRON_2.0.7.hex
- Reset EEPROM.gcode
- PID Tune Hotend.gcode
- PID Tune Bed.gcode

The standard Anycubic Firmware release

This is the standard Anycubic firmware. You can go back and install this version at any time by following the firmware quick start instructions on the next page.

For the old style TFT panel

File list

- CHIRON_1.3.0.hex
- Auto_Leveling.gcode
- Manual_Leveling.code

For the new style TFT panel

File list

- CHIRON_1.3.5.hex
- Auto_Leveling.gcode
- Manual_Leveling.code

There is also a copy of a free terminal program called Termite that may be useful!

Firmware Installation Quick Start

Please follow these quick instructions to upgrade the printer and get printing. These instructions work with any version of firmware.

Before You Start (Optional)

If you have already PID tuned and E-Step calibrated your printer it may be worth making a record of your settings. To do this connect a terminal program to the printer and send M503 to display settings. Save this info somewhere useful!

Things you MUST DO or the printer won't work correctly

Upload the firmware

- 1) Connect your printer to a PC and launch Cura
- 2) In Cura got to Settings>Printer>Manage Printers...
- 3) Click Update Firmware then Upload Custom Firmware
- 4) Browse to the firmware file you want to install and click ok.
- 5) Once the firmware has installed the printer will reboot
- 6) You can check the version on the panel under Tools>More>Info

Reset the printer settings

Every time you change a firmware version you must to reset the controller EEPROM.

Either send the commands M502 M500 from your PC

Or copy `Reset EEPROM.gcode` onto an SD card and print it.

Level the bed

Follow the instructions on the next page to level the print bed.

Things you SHOULD do for optimal printing

The settings in this firmware are specifically calibrated for the Chiron, but if you wish to re run the calibration here's an easy way to do it!

PID tune the hotend

- 1) Copy the file `PID Tune Hotend.gcode` to the SD card and print it.
- 2) The printer will beep when finished.

PID tune the heated bed

- 1) Copy the file `PID Tune Bed.gcode` to the SD card and print it.
- 2) The printer will beep when finished.

Calibrate the extruder E-STEPS

Please read the included guide 'Anycubic Chiron Step by Step Extruder flow calibration.pdf'

How do things work?

Bed Levelling

The bed levelling uses the Anycubic Probe which creates a 5 x 5 mesh that is used to adjust the Z axis position during print. The mesh is automatically saved after homing and is automatically loaded and applied every time the printer is homed.

Top Tip! The bed levelling will be more accurate if you probe the bed when it is hot!

Here are the bed levelling steps: **Please follow these steps carefully!**

- 1) Home the printer
- 2) From the panel select Tools>More>Level>Probe make sure the probe is fitted then click OK. The printer will now probe the bed.
- 3) Once probing has finished, the head will park and you should remove the probe.
- 4) Now you must set the probe offset. Select Tools>More>Level>Advanced Setting
- 5) Tap red dot number 13 twice and the head will move to the centre of the bed and will be about 2mm above the bed.
- 6) **Check the 'ALL' box** and place a piece of paper under the head.
- 7) Use the +/- buttons to lower the head so that it grips the paper. You should be able to pull the paper but not push it. Now click OK.
- 8) The bed is now levelled!

Mesh Point Adjustment

If you want to check and adjust individual points:

- 1) Home the printer
- 2) Go to the advanced level menu and click any of the red dots twice. The head will move to the probe point and you can adjust the level using the +/- buttons on the panel.

NOTE: When using the Advanced Setting screen

- Click OK to save your changes
- Click back to cancel and revert to the last saved values.

Filament Runout

When the filament runs out, the printer will beep and the head will park. The old filament will be ejected and the printer will beep then you load the new filament and the print will continue. The extruder heater will shut down after 3 minutes, and will reheat before attempting to feed in the filament or restart the print. Use the 'Continue' button on the front panel to tell the printer to continue the process.

The filament workflow looks like this:

- 1) The filament runs out
- 2) The printer beeps and parks the head and shows a warning on the panel
- 3) Printer ejects the remaining filament then beeps 5 times and waits
- 4) Insert the new filament and click continue
- 5) The printer will slowly feed 50mm of filament
- 6) It will then accelerate and feed a further 500mm
- 7) Finally, it will slow down and purge the last 100mm
- 8) Once the filament starts to come out of the nozzle, click continue and the print will resume.

Power loss Recovery

The printer can automatically recover a failed print during a power loss under the following conditions:

- 1. You must be printing from the SD card**
- 2. The print file must be in the root folder**
- 3. You must leave the front 10cm of the bed clear**

Note: It is best to have just 1 or 2 files on the SD card for power loss recovery. If you have lots of files on the SD card, the power loss recovery may fail to save the last state when the power goes out. If this happens the job will not auto recover.

The power loss recovery works like this:

- 1) The power goes out!
- 2) The printer saves the current printer state into a file called PLR on the root of the SD card.
- 3) Manually move the print head off the print as it may get stuck.
- 4) Turn on the printer, you will hear an SOS beep to tell you the printer is in recovery mode.
- 5) Browse the SD card and select the file that was printing, then click 'resume'.
- 6) The printer will home X and Y then will home Z so it should be clear of the print.
- 7) The bed and hotend will be reheated.
- 8) The head will then raise to a height 5mm above the point where the print failed.
- 9) The head will lower onto the print and it will resume where it left off.
- 10) The PLR file will be automatically deleted.

If the power fails again, the print will be recovered from the new fail point.

If you wish to cancel recovery mode:

- 1) resume the print then stop it
- 2) Print a different file
- 3) Delete the PLR file from the SD card.

Live Baby Stepping during print

If you need to nudge the Z axis during a print you can now do this from the Advanced levelling menu.

Baby stepping works like this:

- 1) During a print Select Tools>More>Level>Advanced Setting
- 2) **Make sure ALL is selected**, the display will show 0.00
- 3) Each press of the +/- button will move the head by 0.05 mm
- 4) If you return to the menu during the print, that value will show how far the Z axis has been nudged.

At the end of the print the nudge value will be cleared. This is a temporary value that is not saved.

WARNING: This feature does not obey end stops so you can push the head into the bed with repeated movements, so use with caution!

Source Code

The source code for this release is part of the main Marlin Github repository which you can find here:

<https://github.com/MarlinFirmware/Marlin>

The configuration files for the Chiron are located in the Marlin config repository here:

<https://github.com/MarlinFirmware/Configurations>

To build your own version of this firmware:

- 1) Download the Main Marlin Repository
- 2) Download the Marlin Configurations Repository
- 3) Replace `configuration.h` and `configuration_adv.h` in the `Marlin\` folder with the versions in `Configurations/config/examples/AnyCubic/Chiron/` in the Configurations repository.
- 4) Build away!

A quick shout out!

Thank you to:

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For risking your machines testing the beta version of the firmware to help get it all working as it should!