

RAMPS/RUMBA

Firmware

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MAKERFARM

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Installing firmware is pretty straight forward, if you get an error message read through this guide again to make sure you are properly following the steps in this guide.

Downloads

Download the firmware below that matches your Printer, electronics and LCD:

I3V:

- 8" i3v with RAMPS and Standard LCD: [Download](#)
- 10" i3v with RAMPS and Standard LCD: [Download](#)
- 10" i3v with RUMBA and Standard LCD: [Download](#)
- 10" i3v with RUMBA and Graphical LCD: [Download](#)
- 12" i3v with RAMPS and Standard LCD: [Download](#)
- 12" i3v with RUMBA and Standard LCD: [Download](#)
- 12" i3v with RUMBA and Graphical LCD: [Download](#)

Pegasus:

- 8" Pegasus with RAMPS, Single Extruder and Standard or No LCD: [Download](#)
- 8" Pegasus with RAMPS, Dual Extruder and Standard or No LCD: [Download](#)
- 8" Pegasus with RAMPS, Single Extruder and Graphical LCD: [Download](#)
- 8" Pegasus with RAMPS, Dual Extruder and Graphical LCD: [Download](#)
- 10" Pegasus with RAMPS, Single Extruder and Standard or No LCD: [Download](#)
- 10" Pegasus with RAMPS, Dual Extruder and Standard or No LCD: [Download](#)
- 10" Pegasus with RAMPS, Single Extruder and Graphical LCD: [Download](#)
- 10" Pegasus with RAMPS, Dual Extruder and Graphical LCD: [Download](#)
- 12" Basic Pegasus Printer, Pegasus Single Extruder: [Download](#)
- 12" Basic Pegasus Printer, Dual Extruder: [Download](#)
- 12" Basic Pegasus Printer, Titan Extruder: [Download](#)

RAMPS/RUMBA Driver: [Download](#)

Arduino Software: www.arduino.cc, download the arduino software version 1.0.6 (Don't get a newer version, get 1.0.6) and install on your PC or Mac.

If you have a Pegasus Printer follow pages 4-7, if you have an i3v Printer skip to page 11, if you have RUMBA skip to pages 8-10

Installing Pegasus RAMPS firmware

1. First we will install the driver for your Printer, after you download the RAMPS/RUMBA driver on page 3 unzip the file then run “RRD_RUMBA_TAURINO_DriverSetup.exe”
2. If you haven't already downloaded the arduino software goto www.arduino.cc, click on “Download”, then click on “Previous Releases” then Download Arduino 1.0.6 (Don't get a newer version, get 1.0.6) that matches your Operating System. For this set of instructions we are going to use the Windows version, but other operating systems should be similar. After Downloading the Arduino 1.0.6 software go ahead and install it.
3. Open the Arduino software, Click on the Tools tab, then board and select “Arduino Mega 2560 or Mega ADK”. Then select Tools tab and serial port, take note of the com ports that are listed, since you haven't plugged in your printer yet these ports are not your Printer.
4. Now we are ready to plug the usb cable into our Printer, then plug it directly into your PC (Do not plug into a USB Hub), at this point the driver will install and it will be setup on a Com port, to check open the Arduino software again, Click on the Tools tab then Serial Port, you should now see a new com port, this is your printers Com Port, go ahead and click on that com port under the Serial Port section of the Tools tab.
5. Next Unzip the firmware file that you downloaded earlier, most operating systems have a built in Zip program, for newer Windows operating systems right click on the zip file and click “Extract All” the “Extract”
6. If you have the RAMPS with Standard or No LCD skip ahead to #8 for the RAMPS with Graphical LCD proceed to #7
7. Now that we have extracted our firmware you should see the following in the Firmware Folder: “u8glib_arduino_v1.15”, Unzip the file, then inside of the “u8glib_arduino_v1.15” folder you will see a folder called “U8glib” we need to copy the U8glib folder into our Arduino/Libraries folder, to do this right click on the U8glib folder and click copy. Now we need to paste this folder into the Arduino Libraries. To do this your Path may be different, but it will be something similar to this: C:\Program Files (x86)\Arduino\Libraries. Once you are in the Libraries folder right click on an empty space and click Paste. You should now see the U8glib folder in the libraries folder as shown on the next page.

Name	Date modified	Type
EEPROM	3/5/2015 5:00 PM	File folder
Esplora	3/5/2015 5:00 PM	File folder
Ethernet	3/5/2015 5:00 PM	File folder
Firmata	3/5/2015 5:00 PM	File folder
GSM	3/5/2015 5:00 PM	File folder
LiquidCrystal	3/5/2015 5:00 PM	File folder
Robot_Control	3/5/2015 5:00 PM	File folder
Robot_Motor	3/5/2015 5:00 PM	File folder
RobotIRremote	3/5/2015 5:00 PM	File folder
SD	3/5/2015 5:00 PM	File folder
Servo	3/5/2015 5:00 PM	File folder
SoftwareSerial	3/5/2015 5:00 PM	File folder
SPI	3/5/2015 5:00 PM	File folder
Stepper	3/5/2015 5:00 PM	File folder
TFT	3/5/2015 5:01 PM	File folder
U8glib	3/6/2015 11:03 AM	File folder
WiFi	3/5/2015 5:01 PM	File folder
Wire	3/5/2015 5:01 PM	File folder

8. Now restart your computer then open the arduino software again, click File, then Open, browse to the firmware you downloaded and unzipped and select the file shown to match your configuration below:

- 8" Pegasus with RAMPS, Single Extruder and Standard or No LCD: **Marlin1_0_2_8Pegasus.ino**
- 8" Pegasus with RAMPS, Dual Extruder and Standard or No LCD: **Marlin1_0_2_8PegasusDual.ino**
- 10" Pegasus with RAMPS, Single Extruder and Standard or No LCD: **Marlin1_0_2_10Pegasus.ino**
- 10" Pegasus with RAMPS, Dual Extruder and Standard or No LCD: **Marlin1_0_2_10PegasusDual.ino**
- 10" Pegasus with RAMPS, Single Extruder and Graphical LCD: **Marlin1_0_2_10PegasusGraphical.ino**
- 10" Pegasus with RAMPS, Dual Extruder and Graphical LCD: **Marlin1_0_2_10PegasusDualGraphical.ino**
- 12" Pegasus: **Marlin1_0_2_Pegasus12.ino**

9. Next you will configure the firmware to match the options on your printer using the configuration.h tab (See next page).

```
#ifndef CONFIGURATION_H
#define CONFIGURATION_H

#include "boards.h"

//=====
//===== Getting Started =====
//=====
/*
Here are some standard links for getting your machine calibrated:
* http://reprap.org/wiki/Calibration
* http://youtu.be/wAL9d7FgInk
* http://calculator.josefprusa.cz
* http://reprap.org/wiki/Triffid Hunter%27s Calibration Guide
* http://www.thingiverse.com/thing:5573
* https://sites.google.com/site/repraplogphase/calibration-of-your-reprap
* http://www.thingiverse.com/thing:298812
*/

// This configuration file contains the basic settings.
// Advanced settings can be found in Configuration_adv.h
// BASIC SETTINGS: select your board type, temperature sensor type, axis scaling, and endstop configuration

//=====
//===== DELTA Printer =====
//=====
// For a Delta printer replace the configuration files with the files in the
// example_configurations/delta directory.
//

//=====
//===== SCARA Printer =====
//=====
// For a Delta printer replace the configuration files with the files in the
// example_configurations/SCARA directory.
//

// User-specified version info of this build to display in [Pronterface, etc] terminal window during
// startup. Implementation of an idea by Prof Braino to inform user that any changes made to this
// build by the user have been successfully uploaded into firmware.
#define STRING_VERSION "1.0.2"


```

Select the Configuration.h tab.

- Endstops - Go to lines 331, 332 and 333, if you have the endstops with the red circuit boards change those 3 lines from false to true as shown below:

```
// Mechanical endstop with COM to ground and NC to Signal uses "false" here (most common setup).
const bool X_MIN_ENDSTOP_INVERTING = true; // set to true to invert the logic of the endstop.
const bool Y_MIN_ENDSTOP_INVERTING = true; // set to true to invert the logic of the endstop.
const bool Z_MIN_ENDSTOP_INVERTING = true; // set to true to invert the logic of the endstop.
```

- Extruder - Go to line 523, if you have a pegasus extruder your esteps will most likely be 102.3, change the highlighted 90 below to 102.3. If you have a Titan you will change it to 418.5

```
#define DEFAULT_AXIS_STEPS_PER_UNIT {80.19,80.19,800,90} // default steps per unit for Ultimaker
```

- Z Rods - Go to line 523, if you have the standard M5 threaded rods make sure the Z steps are set to 4000, if you have the ACME upgrade kit you will set them to 800

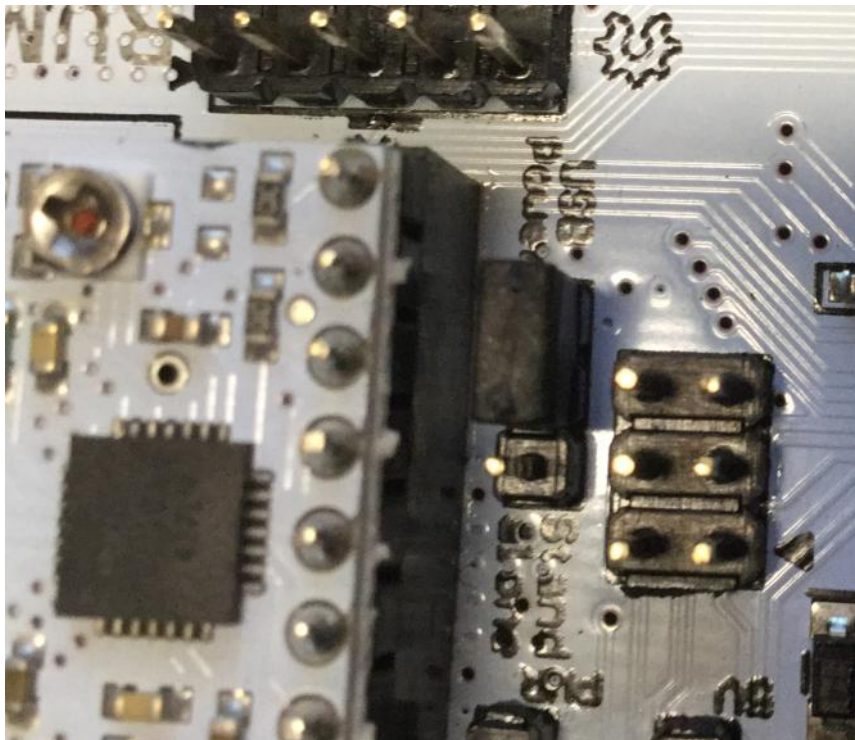
```
#define DEFAULT_AXIS_STEPS_PER_UNIT {80.19,80.19,4000,90} // default steps per unit for Ultimaker
```

10. Now that we have our firmware loaded, printer plugged in via USB cable directly into the PC, “Arduino Mega 2560 or Mega ADK” selected in the Tools, Board menu and we have our printer’s Com port selected in the Tools, Serial Port menu all we need to do is click on Sketch then Verify/Compile, if you do not get any errors and see “Done Compiling” at the bottom then click File, then Upload. You will see “Compiling Sketch” then the lights will start to flash when you see “Uploading”, when it finishes you will see “Done Uploading”

Uploading RUMBA Firmware:

First make sure you have downloaded the Rumba Firmware that matches your LCD and the Rumba Drivers on page 3 of this guide.

1. Now that you have downloaded the Driver for your Rumba Board, go ahead and unzip the driver then Run the “RRD_RUMBA_TAURINO_DriverSetup.exe” you just unzipped.
2. If you haven't already downloaded the arduino software goto www.arduino.cc, click on “Download”, then click on “Previous Releases” then Download Arduino 1.0.6 (Don't get a newer version, get 1.0.6) that matches your Operating System. For this set of instructions we are going to use the Windows version, but other operating systems should be similar. After Downloading the Arduino 1.0.6 software go ahead and install it.
3. Open the Arduino software, Click on the Tools tab, then board and select “Arduino Mega 2560 or Mega ADK”. Then select Tools tab and serial port, take note of the com ports that are listed, since you haven't plugged in your rumba board yet these ports are not your rumba boards port.
4. Now we are going to set the Rumba to receive power via USB. Right next to the X Stepper driver there are 3 pins with USB Power on one side and Stand Alone on the other, move the jumper so it is on the two pins nearest USB Power.



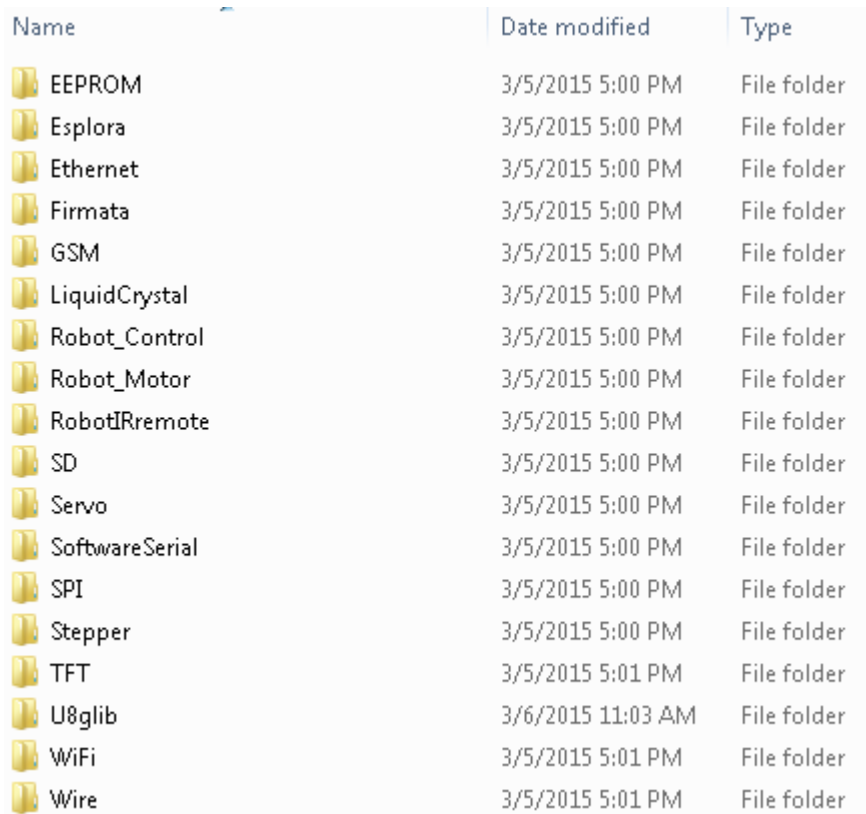
5. Now we are ready to plug the usb cable into our Rumba, then plug it directly into your PC (Do not plug into a USB Hub), at this point the driver will install and it will be setup on a Com port, to check open the Arduino software again, Click on the Tools tab then Serial Port, you should now see a new com port, this is your Rumba's Com Port, go ahead and click on that com port under the Serial Port section of the Tools tab.

Uploading RUMBA Firmware (Continued):

6. Next Unzip the firmware file that you downloaded earlier, most operating systems have a built in Zip program, for newer Windows operating systems right click on the zip file and click “Extract All” the “Extract”

7. If you have the Rumba with Standard LCD skip ahead to #9 for the Rumba with Graphical LCD proceed to #8

8. Now that we have extracted our firmware you should see the following in the Firmware Folder: “u8glib_arduino_v1.15”, Unzip the file, then we need to copy the U8glib folder into our Arduino/Libraries folder, to do this right click on the U8glib folder and click copy. Now we need to paste this folder into the Arduino Libraries. To do this your Path may be different, but it will be something similar to this: C:\Program Files (x86)\Arduino\Libraries. Once you are in the Libraries folder right click on an empty space and click Paste. You should now see the U8glib folder in the libraries folder as follows:



Name	Date modified	Type
EEPROM	3/5/2015 5:00 PM	File folder
Esplora	3/5/2015 5:00 PM	File folder
Ethernet	3/5/2015 5:00 PM	File folder
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LiquidCrystal	3/5/2015 5:00 PM	File folder
Robot_Control	3/5/2015 5:00 PM	File folder
Robot_Motor	3/5/2015 5:00 PM	File folder
RobotIRremote	3/5/2015 5:00 PM	File folder
SD	3/5/2015 5:00 PM	File folder
Servo	3/5/2015 5:00 PM	File folder
SoftwareSerial	3/5/2015 5:00 PM	File folder
SPI	3/5/2015 5:00 PM	File folder
Stepper	3/5/2015 5:00 PM	File folder
TFT	3/5/2015 5:01 PM	File folder
U8glib	3/6/2015 11:03 AM	File folder
WiFi	3/5/2015 5:01 PM	File folder
Wire	3/5/2015 5:01 PM	File folder

9. Now restart your computer then open the arduino software again, click File, then Open, browse to the firmware you downloaded and unzipped and select “Marlin_RUMBA_i3v_GLCDPercent.ino” if you have the graphical LCD or “Marlin_RUMBA_i3v.ino” for the Standard LCD.

Uploading RUMBA Firmware (Continued):

10. Now that we have our firmware loaded, Rumba plugged in via USB cable directly into the PC, “Arduino Mega 2560 or Mega ADK” selected in the Tools, Board menu and we have our Rumba’s Com port selected in the Tools, Serial Port menu all we need to do is click on Sketch then Verify/Compile, if you do not get any errors and see “Done Compiling” at the bottom then click File, then Upload. You will see “Compiling Sketch” then the lights will start to flash when you see “Uploading”, when it finishes you will see “Done Uploading”

11. Now that our firmware has been uploaded we can close the arduino software, unplug the USB cable, Plug in our LCD then plug the Usb cable in again, you should now see your LCD power up and display the main LCD screen. If you see that your firmware upload was successful, you can now unplug the USB Cable, move the jumper back over to “Stand Alone” then start wiring your printer.

Installing RAMPS firmware for i3v printers

1. First we will install the driver for your Printer, after you download the RAMPS/RUMBA driver above unzip the file then run “RRD_RUMBA_TAURINO_DriverSetup.exe”
2. If you haven't already downloaded the arduino software goto www.arduino.cc, click on “Download”, then click on “Previous Releases” then Download Arduino 1.0.6 (Don't get a newer version, get 1.0.6) that matches your Operating System. For this set of instructions we are going to use the Windows version, but other operating systems should be similar. After Downloading the Arduino 1.0.6 software go ahead and install it.
3. Open the Arduino software, Click on the Tools tab, then board and select “Arduino Mega 2560 or Mega ADK”. Then select Tools tab and serial port, take note of the com ports that are listed, since you haven't plugged in your printer yet these ports are not your Printer.
4. Now we are ready to plug the usb cable into our Printer, then plug it directly into your PC (Do not plug into a USB Hub), at this point the driver will install and it will be setup on a Com port, to check open the Arduino software again, Click on the Tools tab then Serial Port, you should now see a new com port, this is your printers Com Port, go ahead and click on that com port under the Serial Port section of the Tools tab.
5. Next Unzip the Firmware zip you downloaded earlier, then in the arduino software, click File, then Open, browse to the firmware folder you just unzipped, open the “Marlin_RAMPS_EPCOS_i3.ino”
6. If you have an E3D Hot End we need to modify the thermistor for the hot end, select the Configuration.h tab and scroll down till you see: “#define TEMP_SENSOR_0 6”, change this to: “#define TEMP_SENSOR_0 5”
7. Now that we have our firmware loaded, printer plugged in via USB cable directly into the PC, “Arduino Mega 2560 or Mega ADK” selected in the Tools, Board menu and we have our printer's Com port selected in the Tools, Serial Port menu all we need to do is click on Sketch then Verify/Compile, if you do not get any errors and see “Done Compiling” at the bottom then click File, then Upload. You will see “Compiling Sketch” then the lights will start to flash when you see “Uploading”, when it finishes you will see “Done Uploading”