

mcr

How to update Makelangelo firmware

This guide will show you how to update the code in the brain of a Makelangelo robot

Written By: Dan Royer

```
firmware_rumba  MSerial  MServo.cpp  MServo.h  Vector3.h  Search
//-----
// Inverse Kinematics - turns XY coordinates into 1
void IK(float x, float y, long &l1, long &l2) {
#ifdef COREXY
    l1 = lround((x+y) / THREAD_PER_STEP);
    l2 = lround((x-y) / THREAD_PER_STEP);
#endif
#ifdef TRADITIONALXY
    l1 = lround((x) / THREAD_PER_STEP);
    l2 = lround((y) / THREAD_PER_STEP);
#endif
#ifdef POLARGRAPH2
    // find length to M1
    float dy = y - limit_top;
    float dx = x - limit_left;
    l1 = lround( sqrt(dx*dx+dy*dy) / THREAD_PER_STEP
    // find length to M2
    dx = limit_right - x;
    l2 = lround( sqrt(dx*dx+dy*dy) / THREAD_PER_STEP
```

Makelangelo firmware (v6.17.1)

Suggested Price: **CAD \$10.00**

SKU: FIRM-0001

Category: Downloads

Tags: arduino code, driver, firmware, makelangelo

This project specifically deals with the firmware: the code in the brain of the robot that receives instructions and moves the motors. It pairs really well with Makelangelo, a project to give humans a pleasant GUI.

Please help support the development of this, and other projects by making a donation for the download.


Thank you!

Name Your Price (CAD \$

10.00

Quantity

1

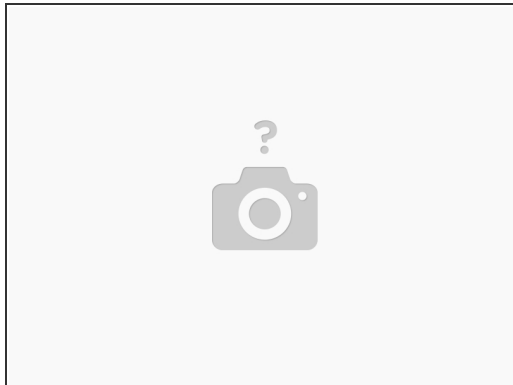
 Add to Cart

Step 1 — Download the firmware

The first screenshot shows the product page for Makelangelo firmware (v6.17.1) on the Marginaly Clever website. It includes the Arduino code for the firmware, a suggested price of CAD \$10.00, and an 'Add to Cart' button. The second screenshot shows the 'Downloads' table and 'Order details' section, where the download link for 'Makelangelo firmware (v6.17.1)' is highlighted. The third screenshot shows a confirmation email with a 'Downloads' table containing the same download link.

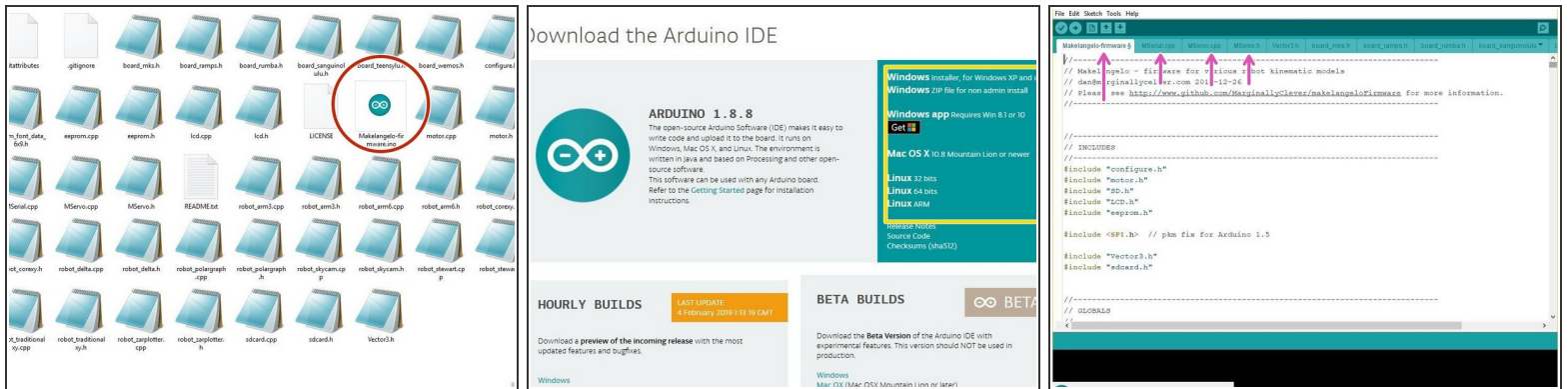
- Download the stable release from <https://www.marginallyclever.com/product...>
- The pricing is optional. You can choose a price of \$0. Your generosity helps us make it great.
- The download link will appear on the checkout page...
- ...and in your order confirmation email.

Step 2 — Install Windows Drivers



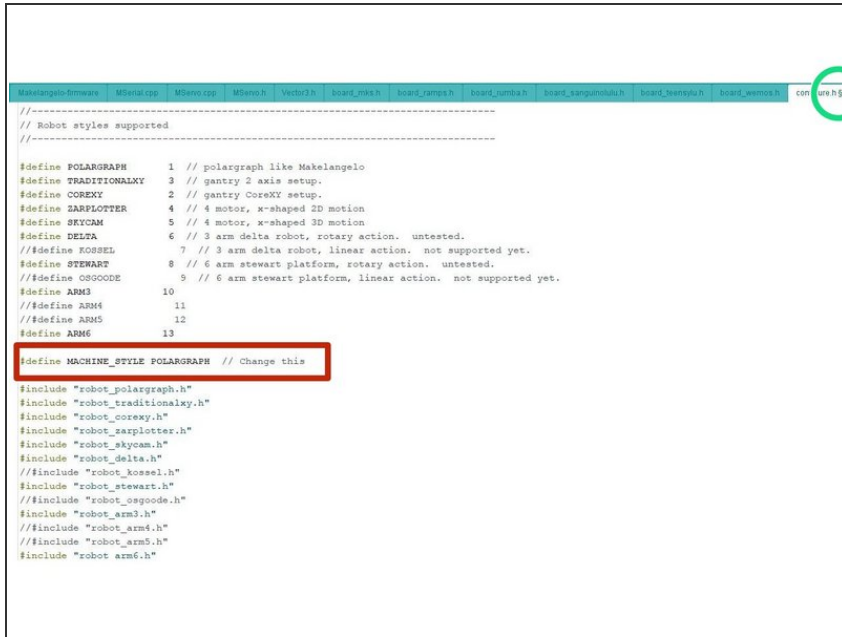
- If you are on Windows, please make sure you already have the drivers for the RUMBA board from https://reprap.org/wiki/RUMBA#RUMBA_USB_...

Step 3 — Open the firmware in Arduino



- Extract the zip file downloaded from the link into a folder called **Makelangelo-firmware**. Double check the *exact spelling*, including the hyphen -.
- Go into the folder and open **Makelangelo-firmware.ino** with the Arduino app.
- The Arduino app is available from <https://www.arduino.cc/en/Main/Software>
- You may be asked to update some features of Arduino. Please follow the prompts and get up to date.
- You should see **many tabs** at the top of the app. If you have only one tab then Arduino has created that folder and moved the ino file into the folder. Quit Arduino, move the rest of the files into the new folder, and re-open the file.

Step 4 — Confirm code settings



```

//-----
// Robot styles supported
//-----
#define POLARGRAPH 1 // polargraph like Makelangelo
#define TRADITIONALXY 3 // gantry 2 axis setup.
#define COREXY 2 // gantry CoreXY setup.
#define DABPLOTTER 4 // 4 motor, x-shaped 2D motion
#define SKYCAM 5 // 4 motor, x-shaped 3D motion
#define DELTA 6 // 3 arm delta robot, rotary action. untested.
// #define KOSSEL 7 // 3 arm delta robot, linear action. not supported yet.
#define STEWART 8 // 6 arm stewart platform, rotary action. untested.
// #define OSGOODE 9 // 6 arm stewart platform, linear action. not supported yet.
#define ARMS 10
// #define ARM3 11
// #define ARM5 12
#define ARM6 13

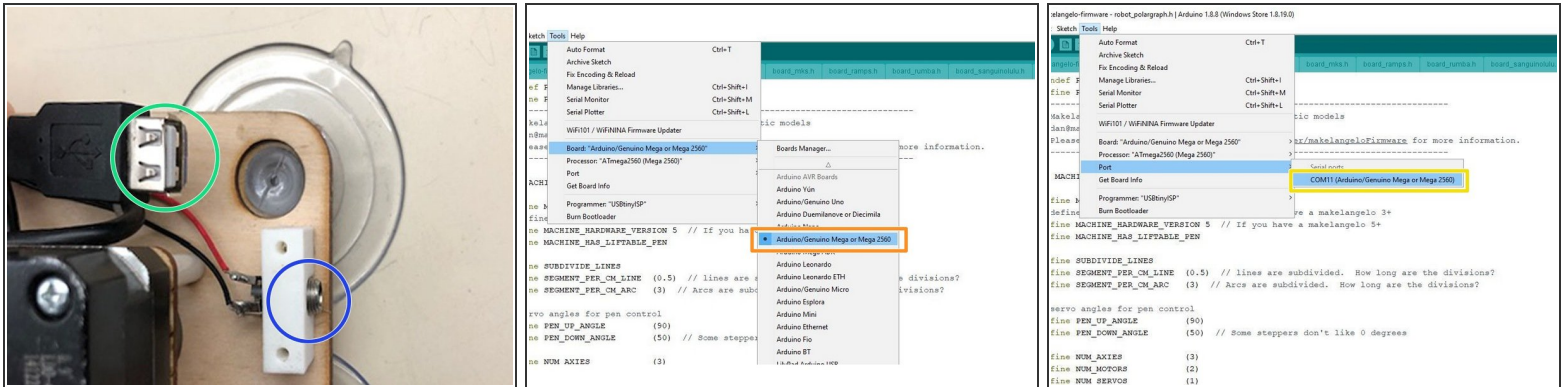
#define MACHINE_STYLE POLARGRAPH // Change this

#include "robot_polargraph.h"
#include "robot_traditionalxy.h"
#include "robot_corexy.h"
#include "robot_darplotter.h"
#include "robot_skycam.h"
#include "robot_delta.h"
// #include "robot_koscel.h"
#include "robot_stewart.h"
// #include "robot_osgoode.h"
#include "robot_arm3.h"
// #include "robot_arm5.h"
#include "robot_arm6.h"

```

- Confirm that in the tab *configure.h*, the line reads **#define MACHINE_STYLE POLARGRAPH**. This firmware runs on many styles of robots and this sets the correct style.
- You can find more tabs in the drop down on the right
- Confirm that in the same tab your machine hardware version is selected. For example,
 - **#define MACHINE_HARDWARE_VERSION ON MAKELANGELO_5** for version 5.
 - **#define MACHINE_HARDWARE_VERSION ON MAKELANGELO_3** for version 3.
 - etc.

Step 5 — Connect your robot to the app



- Connect the USB from your computer to your robot.
 - Connect the 12v2a power supply to your robot.
 - In Arduino, set *Tools* > *Board* to **Mega 2560**
 - set *Tools* > *Port* to the port that says **Mega 2560**. This name is slightly different for OSX and Linux users.
- ⓘ If you do not see any com port, **don't panic**. Read the next step.

Step 6 — If you don't see any Windows COM port

Safety Tip

Caution
Once you start putting electricity into your RepRap - even at just 12 volts - you have to take basic, common sense precautions to avoid injury. Just in case these fail, test your workshop smoke detector. Got no smoke detector? Get one!

RUMBA USB Driver for Windows

i [Easy driver setup for Windows Vista/XP 32 and 64 bit](#)
File:RRD RUMBA TAURINO DriverSetup.zip

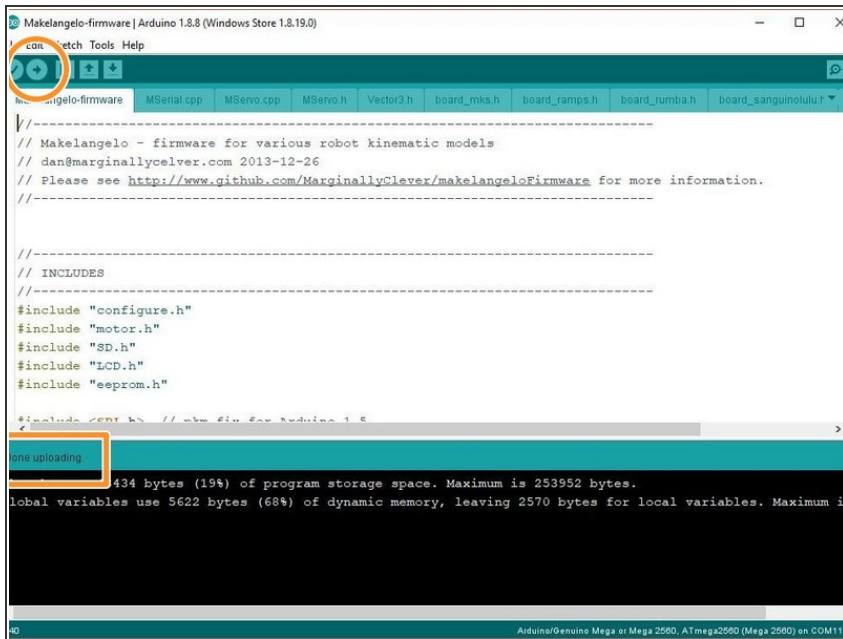
i **CLASSIC: (can cause problems with Windows 8 and Vista/7 64bit, use the easy method from above instead)**
When you attach RUMBA for the first time to a Windows computer you might need to provide a driver (INF file).
File:RRD-RUMBA USB DRIVER.zip

Features

- compact size: 135mm x 75mm
- fully integrated all in one solution:
 - Arduino 2560-R3 compatible (works with Sprinter, Repetier-Firmware, Marlin out of the box)
 - ATmega16U2 (with enhanced firmware) for high speed USB serial connection (up to 2MBit)
- UNIVERSAL POWER:
 - can be used with 12V-35V for motors / heated bed
 - integrated high precision power regulators (DC/DC) for:
 - 12V/5A/16W/1.5A and

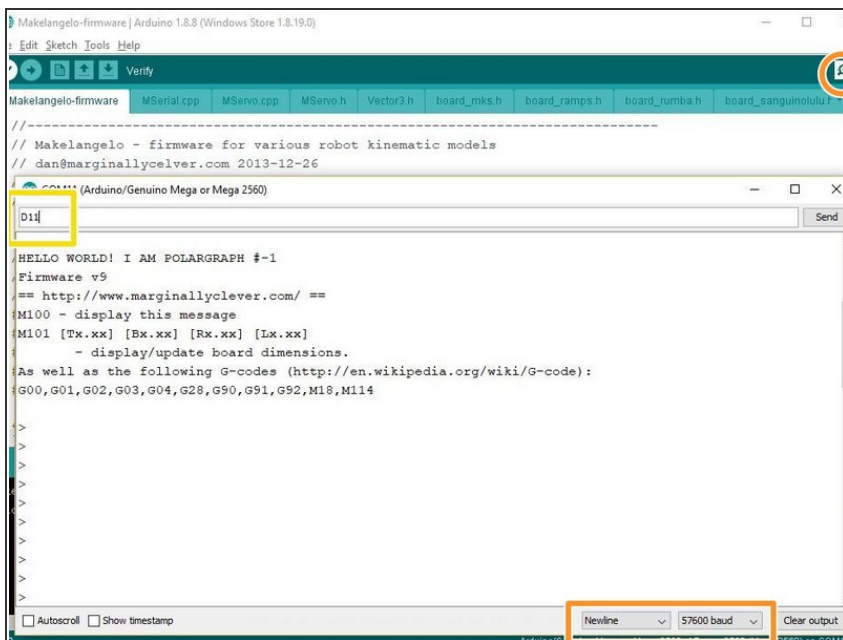
- i** If you already see the COM port, you can ignore this step.
- You may be missing the drivers, which can be downloaded from https://reprap.org/wiki/RUMBA#RUMBA_USB_.... The recommended method is the *Easy driver setup for Windows 8/7/Vista/XP 32 and 64 bit*
- After driver installation if you still don't see the COM port, try rebooting your PC.
- ⚠** Suddenly disconnecting power while your PC is talking to your robot scares Windows. It will hide the COM port until after a reboot as a precaution.

Step 7 — Upload the firmware to the robot



- Click the upload button. The app will say "Compiling..." and then "Uploading..."
- When finished OK, it will say **Done uploading**.
- ⚠ For all other results, please copy all the text in the orange text in the fail message and post it to our support forums at [https://www.marginallyclever.com/forums/...](https://www.marginallyclever.com/forums/)

Step 8 — If this is a brand new Makelangelo 5



- Click the *Serial Window* icon in the top right (looks like a magnifying glass)
- Confirm the dropdowns says **newline** and **57600 baud**. **HELLO WORLD!** text should appear in the window.
- In the text field at the top type **D11** (uppercase) and hit enter or click **Send**. The status window should say *Saving dimensions. Saving calibration. Saving home.*

Congratulations! You are done. The robot is now up to date and should talk to the latest Makelangelo Software.

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