

SUMO ROBOT CONTROLLER CODE: URC10



User's Manual V1.2

April 2019

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1.0 Download & Install Arduino IDE

If this is your first time using Arduino board, you need to install Arduino IDE where you can write your code, compile and download it into your Arduino boards. You can skip this step if you already have Arduino IDE installed in your PC.

Step 1: Log on to https://www.arduino.cc/en/main/software.

Step 2: Choose your OS



Step 3: Arduino IDE is an open source software that allows you to download and use it for free.

However, you are encouraged to make a monetary contribution to help them to continue funding their development. Anyway, you are free to click "JUST DOWNLOAD".



Step 4: Double click on the downloaded file to proceed.



Step 5: Once installation is completed, the Arduino's icon will appear. Double click the icon to launch the Arduino IDE.



2.0 Install Driver for CH340

This board uses CH340 USB to UART converter. To use it, we need to install the CH340 driver at our PC on the first time. You can skip this step if you have installed this driver before.

2.1 For Window Users

Step 1: Download the driver here.

Step 2: Double click the "CH341SER" file to begin installation.



Step 3: Click "INSTALL".

| Select INF | CH341SER.INF ~ |
|------------|----------------------|
| INSTALL | WCH.CN |
| UNINSTALL | 08/08/2014, 3.4.2014 |
| | |

Step 4: Go to window search, seaarch for "device manager".



Step 5: At "device manager", click the down arrow to expand "Ports (COM & LPT)".

Check which port the CH340 driver is being assigned to. Remember the com number. (For this example, the com number is com 5)



Step 6: Connect the board to your PC using a micro USB cable.



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Step 7: Launch Arduino IDE. Select the right com port. Tools >Ports >COM X

The CH340 driver is assigned to this COM port, remember to select this COM port everytime you want

| Arduino 1.8.6 | | | | | | | | |
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| WiFi101 Firmware Updater | | | | | | | | |
| Board: "Arduino/Genuino Uno" | | > | | | | | | |
| Port: "COM5" | | > | Serial ports | | | | | |
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2.2 For Mac Users

Step 1: Download the driver here.

Step 2: Double click the zip file, open the unzip folder then double click the pkg file.



Step 3: Click "Continue" to begin installation.



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Step 4: Once complete installing, click "Restart" to restart your Mac.



Step 5: After you have restarted your Mac, connect the board to your Mac using a micro USB cable.



Step 6: Launch "Arduino IDE" then choose the right port at Tools > Port > /dev/cu.wchusbserial1410

You need to repeat this step every time you want to program a CH340 board.

| | Auto Format Archive Sketch Fix Encoding & Beload | ЖΤ | sketch_aug27a Arduino 1.8.5 |
|-------------------------------------|--|-----|--|
| sketch_aug27a | Serial Monitor | ☆業M | |
| oid setup() { | Serial Plotter | 仓策L | |
| // put your setup code here, to run | WiFi101 Firmware Updater | | 1 |
| - | Board: "Arduino/Genuino Uno" | • | |
| oid loop() { | Port: "/dev/cu.wchusbserial1410" | ► | Serial ports |
| // put your main code here, to run | Get Board Info | | /dev/cu.HM-12T-SerialPort-7 |
| | Programmer: "AVRISP mkll" Burn Bootloader | • | /dev/cu.JBLGO-vCOMM-1 /dev/cu.Bluetooth-Incoming-Port /dev/cu.rero-SerialPort-11 |
| | | | ✓ /dev/cu.wchusbserial1410 |

3.0 Uplaoding Sample Code

The sample program involved *Cytron motor driver library*, it is easier to include the library before we load the program.

Step 1: Launch Arduino IDE. Go to Sketch > Include Library > Manage Libraries



Step 2: Type "cytron motor drivers library" at the search bar. Click the selection then click "install".

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|------------------------------|---|---|------------------------------------|-------------------------------|------------------------------|---------------|---------|--|
| ype | All | 📀 Topic | All | ᅌ cyt | cytron motor drivers library | | | |
| Cytron Library More in | n Motor Drivers L y for Cytron Moto l <mark>fo</mark> | ibrary by Cytron 1 or Drivers. Provide | echnologies Sdn examples on how | Bhd to use the motor drive | ers. | | | |
| | | | | | | Version 1.0.1 | Install | |
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Step 3: Download the sample code here. Click "Clone or download" then "Download ZIP".

| | e Explore – Marketplace Prie | icing ~ Search | h | Sign in | Sign |
|--|---|---|---|---|-------------|
| CytronTechnologies / URC10 | SumoRobot | | • Watch 4 | ★ Star 0 😵 | Fork |
| <>Code ① Issues 0 1% Pull | I requests 0 II Projects 0 | III Insights | | | |
| | Join GitH GitHub is home to over 31 million c and review code, manage proje | Hub today developers working tog ects, and build software | ether to host together. | D | ismiss |
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| rduino example program for Sum 2 commits Branch: master New pull request waiweng83 Updated for Hackster Tut URC10SumoRobot | o Robot using URC10 [®] 1 branch torial. Updated for Hackster | r Tutorial. | Ses Line with HTTP Use Git or checkout v https://github.co | I contributor Find File Clone or do S ③ with SVN using the web om/CytronTechnologie | URL. |
| rduino example program for Sum © 2 commits Branch: master • New pull request waiwengB3 Updated for Hackster Tut URC10SumoRobot | o Robot using URC10 | r Tutorial. | Ses Clone with HTTP Use Git or checkout v https://github.co Open in Desktop | La 1 contributor Find File Clone or do S ③ with SVN using the web om/CytronTechnologie Download | URL. s È |

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Step 4: Unzip the file, double-click the unzipped file. You will see the sample code as shown below.

| | | URC10SumoRobot Arduino 1.8.5 |
|--|--|--------------------------------|
| | | |
| URC10SumoRobot | | |
| ***** | ****** | 2.4.00000 |
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| * AUTHOR : Kong | Wai Weng | |
| * COMPANY : Cytro | n Technologies Sdn Bhd | |
| * WEBSITE : www.c | <u>ytron.io</u> | |
| * EMAIL : suppo | rt@cytron.io | |
| * | | |
| | | |
| #include <cvtronmot< td=""><td>orDriver by</td><td></td></cvtronmot<> | orDriver by | |
| File cude sey er offilot | | |
| | | |
| <pre>// Wiring Connection</pre> | ns. | |
| #define LED0 | 0 // Unboard LED 0 | |
| Faetine LED1 | 1 // Unboard LED 1 | |
| #define EDCE | 13 // Start Dutton | |
| #define EDGE P | 11 // Pight adap sensor | |
| #define OPPONENT | 3 // Left onnonent sensor | |
| #define OPPONENT R | 10 // Right opponent sensor | |
| #define OPPONENT FR | A0 // Front right opponent sensor | |
| #define OPPONENT_FC | A1 // Front center opponent sensor | |
| #define OPPONENT_FL | A2 // Front left opponent sensor | |
| // Direction | | |
| #define LEFT 0 | | |
| #define RIGHT 1 | | |
| | | 0 |

Step 5: Click the arrow pointed icon to upload the sample code to your board.

You will see the LED at D0 and D1 (on the board) blinking while the code is uploading. Once completed, you will see a message "Done Uploading" appeared at the bottom of the sketch.

| 🥑 📀 🛅 🔛 Upload Using Programmer | |
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| URCA moRobot | |
| /******** | |
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| * DESCRIPTION- | |
| * | |
| * This is the example of Sumo Robot based on the URC10 Sumo Robot Controller. * * | |
| * | |
| * AUTHOR : Kong Wai Weng * COMPANY : Cytron Technologies Sdn Bhd * WEBSITE : <u>www.cytron.io</u> * EMAIL : support@cytron.io | |
| | |
| *************************************** | |
| <pre>#include <cytronmotordriver.h></cytronmotordriver.h></pre> | |

4.0 Building The Robot

The earlier steps are merely assist you to setup the Arduino IDE and upload the sample code to the board. You still need to construct the robot and connect all the motors and sensors to the board for it to work.

If you are a beginner, you are advised to follow <u>this post</u> where we shared how to construct the sumo robot in more details.



Prepared by **Cytron Technologies Sdn. Bhd.** No. 1, Lorong Industri Impian 1, Taman Industri Impian, 14000 Bukit Mertajam, Penang, Malaysia. *Tel: +604-548 0668 Fax: +604-548 0669 URL:www.cytron.io Email: support@cytron.io* sales@cytron.io