gizDuino UNO - SE

Technical Manual

e-Gizmo
MECHATRONIX CENTRAL

You asked for it. You got it.

There has been a growing clamor from students for us to build a truly low cost Arduino UNO compatible board, one that has all the functionalities of the Arduino UNO* , but at a price that is comparable to those cheap China boards, all without sacrificing quality.

Now that is a tall order indeed. We spent the last couple of years trying to figure out how we can come up with such product at low cost. How can you build something and sell it at a profit for a price less than half of the total cost of the components used in the board? Chinese manufacturers can because they have the required volume that gives them a bargaining power to demand substantial discounts from component vendors. Combined that with their low manufacturing costs (and non existent quality controls by some manufacturers), and their tax free privileges, there is simply no way we small local manufacturers can compete from a price standpoint.

But that doesn't mean we should not give it a try. So we decided to go ahead with a low cost Arduino UNO compatible board, this is to be known as the gizDuino UNO Student Edition, or gizDuino UNO -SE

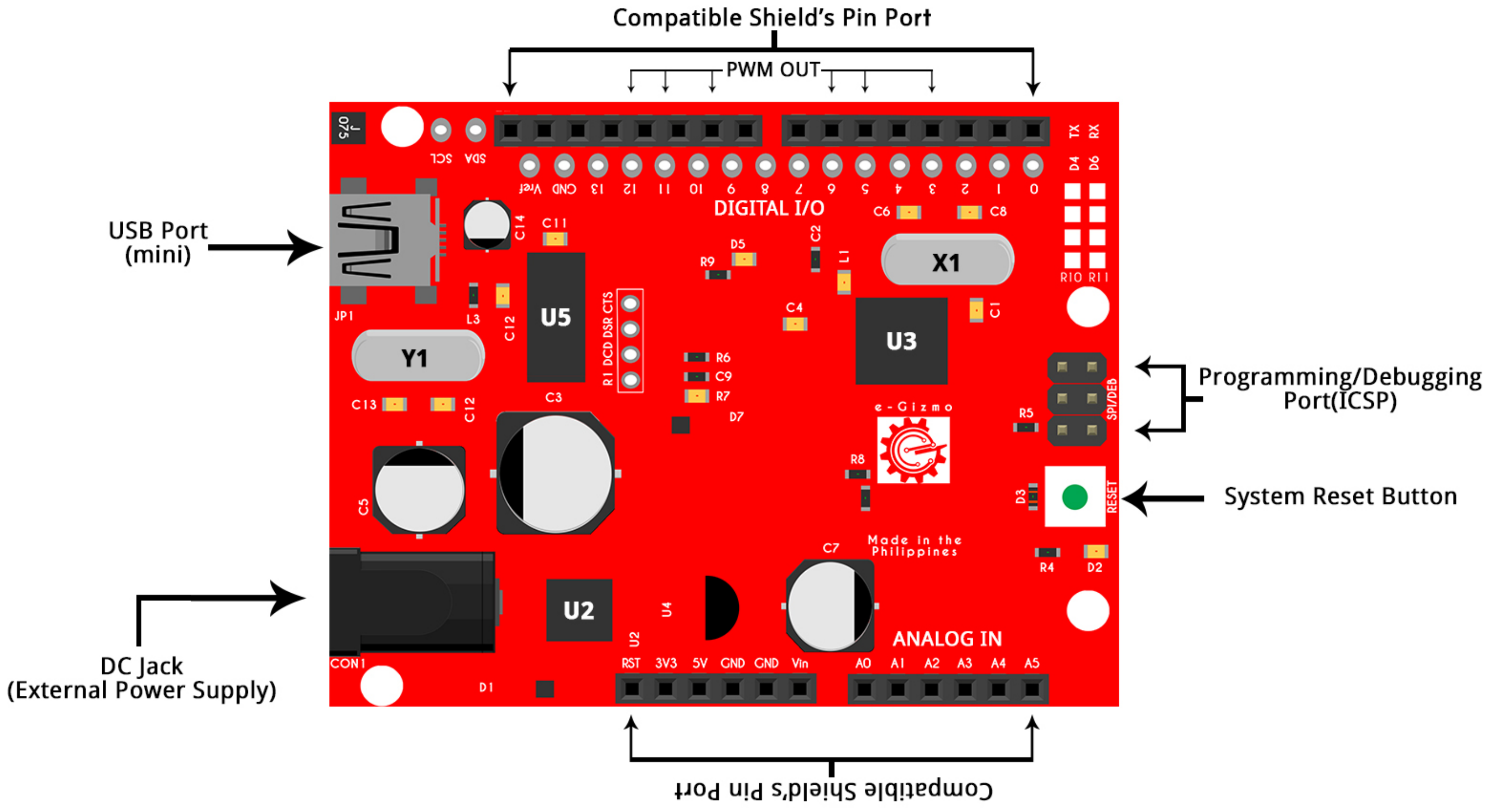
Features:

- Uses the same core MCU ATMEGA328P
- 100% Arduino Code compatible
- CH340 USB to UART Bridge

Specifications:

-Microcontroller: ATmega328
-User Interface: USB Port, DC Jack, Reset Button, ICSP Port, Shield Connection Port
-Debbuger Port: ICSP
-Power Input: External:8V-12V USB:5V
-DC Power Output: 3.3V
-PCB Size: 6 x 5 cm
-On-board Crystal: 16MHz and 12MHz

Major Components


Compatible Shield's Pin Port

PWM OUT

USB Port (mini)

DC Jack (External Power Supply)

Programming/Debugging Port(ICSP)

System Reset Button

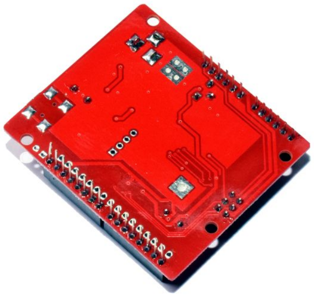
Compatible Shield's Pin Port

U2 - On-board Voltage Regulator
U3 - Atmega328p
U5 - CH340 Driver
X1 - 16MHz Crystal
Y1 - 12MHz Crystal

gizDuino UNO-SE

gizDuino UNO-SE uses the same microcontroller core (ATMEGA328P) as the Arduino UNO , hence, there will be no code compatibility issue - if it runs with Arduino UNO, it will run on a gizDuino UNO-SE without any modification. It has the same I/O pin layout, ensuring compatibility will all Arduino UNO and gizDuino shields, and connects with the Arduino IDE by selecting Arduino UNO in the board selection menu.

One of the strategies we adopted to get for a low price is to use the same USB bridge that is universally used in all Chinese UNO compatible, the CH340 chip. This chip may require you to install USB drivers on your PC, and may require additional tweaking if you connect it with Linux or IOs (Apple) machine. The thing is, if you have the experience working with Chinese UNO compatibles, you won't have difficulties setting up



Also, we greatly simplified the power supply routing of the gizDuino UNO-SE. The only difference that you will notice, compared to the Arduino UNO , is +5V power will not be available on the USB port when the gizDuino is not connected to a PC. We can't imagine any foreseeable issue about this change, unless perhaps if you use the gizDuino USB port for an unlikely purpose, like as using it as a charger.

Finally, we will be losing money for every gizDuino UNO-SE we sell. For this reason, this special priced product will be available for sale to students and teachers ONLY, in a limited quantity per purchase. Something we would like to avoid is to request for a student I.D. when you purchase this product, but please bring one, in case a situation arise when we have to see your I.D. :-)

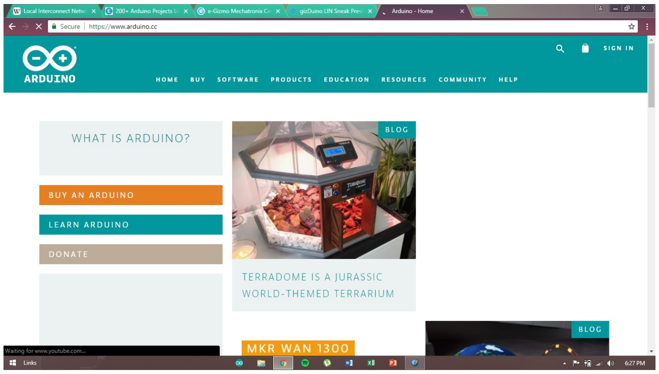
Basic Manual on how to use gizDuino UNO-SE

Arduino IDE

Arduino is an open-source electronics platform based on easy-to-use hardware and software. You can tell the board what action to take by sending a set of instructions to the microcontroller on the board. To do so you use the Arduino programming language (based on Wiring) and the Arduino software (IDE), based on Processing.

The gizDuino UNO- SE is 100% code compatible with the popular Arduino board. For these reasons the Arduino IDE is needed to program the gizDuino UNO - SE.

1. You can obtain the Arduino IDE Version 1.8.5 by downloading the zip file from the official Arduino website by doing the following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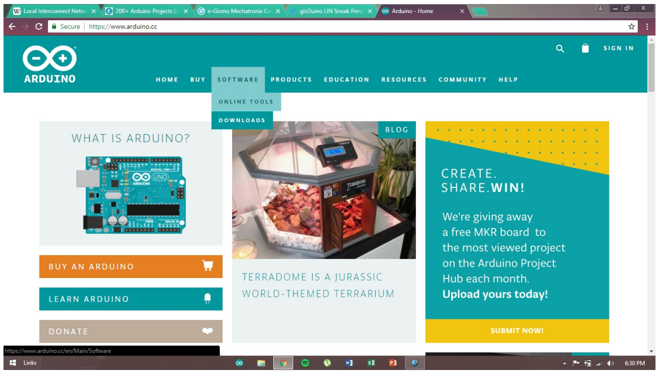
1.1. Go to arduino.cc and go to the Software tab and select downloads.



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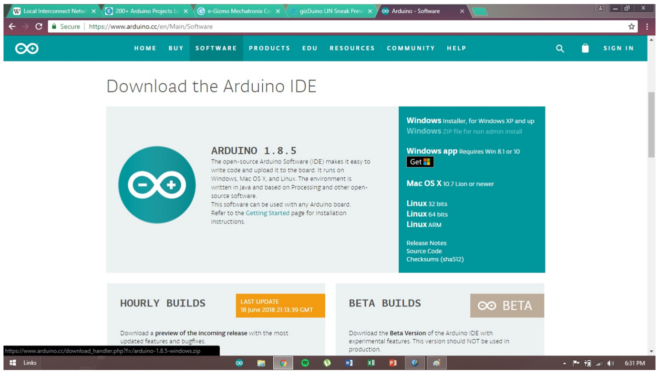
We're giving away a free MKR board to the most viewed project on the Arduino Project Hub each month. Upload yours today!

1.2. Scroll down until you find the Download Arduino section then select the Windows ZIP for non-admin install.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Get
BETA

Download the Arduino IDE

ARDUINO 1.8.5

The open-source Arduino Software (IDE) makes it easy to write code and upload it to the board. It runs on Windows, Mac OS X, and Linux. The environment is written in Java and based on Processing and other open-source software.
This software can be used with any Arduino board.
Refer to the Getting Started page for Installation instructions.

Windows Installer, for Windows XP and up
Windows ZIP file for non admin install
Windows app Requires Win 8.1 or 10
Mac OS X 10.7 Lion or newer
Linux 32 bits
Linux 64 bits
Linux ARM
Release Notes
Source Code
Checksums (sha512)

HOURLY BUILDS

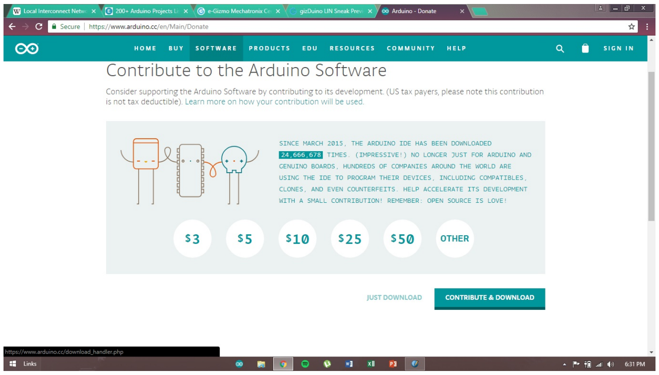
LAST UPDATE
18 June 2018 21:13:39 GMT

Download a **preview of the incoming release** with the most updated features and bugfixes.

BETA BUILDS

Download the **Beta Version** of the Arduino IDE with experimental features. This version should NOT be used in production.

1.3. You will be directed to the download page. Select just download.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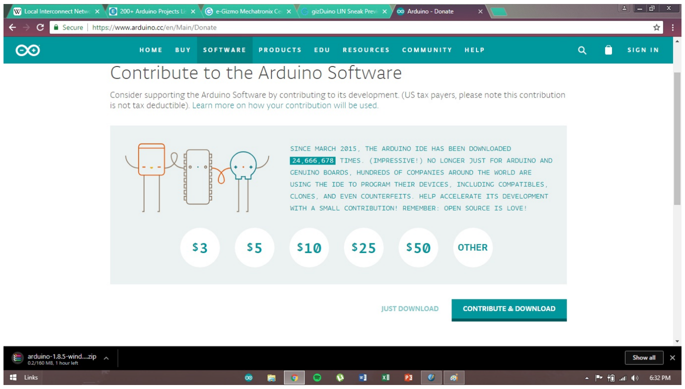
Contribute to the Arduino Software

Consider supporting the Arduino Software by contributing to its development. (US tax payers, please note this contribution is not tax deductible). Learn more on how your contribution will be used.

SINCE MARCH 2015, THE ARDUINO IDE HAS BEEN DOWNLOADED 24,666,678 TIMES. (IMPRESSIVE!) NO LONGER JUST FOR ARDUINO AND GENUINO BOARDS, HUNDREDS OF COMPANIES AROUND THE WORLD ARE USING THE IDE TO PROGRAM THEIR DEVICES, INCLUDING COMPATIBLES, CLONES, AND EVEN COUNTERFEITS. HELP ACCELERATE ITS DEVELOPMENT WITH A SMALL CONTRIBUTION! REMEMBER: OPEN SOURCE IS LOVE!

1.4. Once downloaded, extract the ZIP file to the folder of your choice.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Contribute to the Arduino Software

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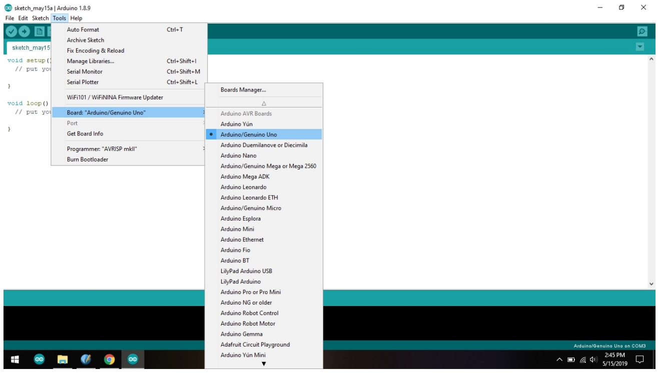
1.5 Your Arduino IDE is now ready for use.

2. Now that you have the Arduino IDE its time to install the CH340 Driver. It is used by a number of Arduino compatible boards to provide USB connectivity

2.1. To install just go to e-gizmo.net and look for gizDuino UNO - SE.
2.2. Scroll down until you find the CH340 Driver Installer then clik download.
2.3. Run the CH340 DriverInstaller to install the prolific driver.
2.4. The CH340 Driver is now installed in your computer.

3. Afterwards open the Arduino IDE and connect the gizDuino LIN to the USB port.

4. On the IDE, go to the Tools tab and select board then choose Arduino/Genuine Uno.



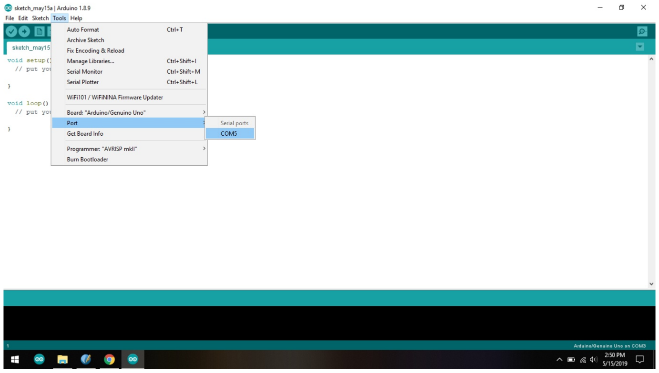
```
void setup()
  // put yo

}

void loop()
  // put yo

}
```

5. Then on the Tools tab, select Port and choose the port where the gizDuino UNO - SE is connected to, in this case my board is connected to "COM5".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Archive Sketch
Fix Encoding & Reload
Manage Libraries... Ctrl+Shift+I
Serial Monitor Ctrl+Shift+M
Serial Plotter Ctrl+Shift+L
WiFi101 / WiFiNINA Firmware Updater
Board: "Arduino/Genuino Uno"
Port
Get Board Info
Programmer: "AVRISP mkII"
Burn Bootloader
Serial ports
COM5
Arduino/Genuino Uno on COM3
2:50 PM
5/15/2019

```
void setup()
  // put yo

}

void loop()
  // put yo

}
```

6. You can now start programming the gizDuino UNO - SE

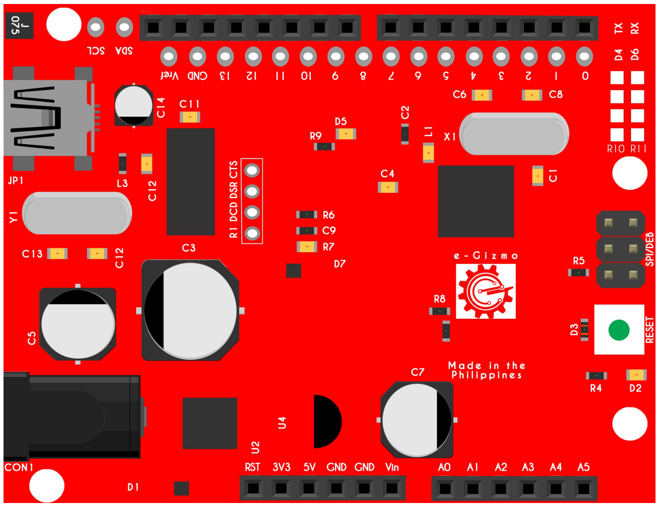
Sample Project: Blinking Light

We will be using the gizDuino UNO - SE to create a simple arduino project.

Materials:
-gizDuino UNO - SE

1. To start the project open the Arduino IDE and connect the gizDuino UNO - SE to the computer
2. Make sure that the board selected is "Arduino/Genuino Uno"
3. Go to File > Examples > Basics > Blink
4. Select the verify button on the top left corner of the software denoted by a "check" mark. This will help you check whether there are errors on the code.
5. Once done, select the upload button located right next to the verify button. This will upload the code to the gizDuino UNO-SE
6. Once done, look closely at the gizDuino UNO - SE. You will notice that one of the Built-in LED is blinking(This is the reason why we do not use any external LED for this project.)

You have successfully done your first project with gizDuino UNO-SE!


J2
SCL
SDA
Vref
GND
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11
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8
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TX
RX
D4
D6
C6
C8
C14
C11
D5
R9
C2
L1
X1
RIO R11
JP1
L3
C12
R1 DCD DSR CTS
C4
C1
Y1
R6
C9
R7
D7
C13
C12
C3
e-Gizmo
R5
SPI/DEB
R8
D3
RESET
C5
C7
Made in the Philippines
R4
D2
U4
U2
CON1
D1
RST
3V3
5V
GND
GND
Vin
A0
A1
A2
A3
A4
A5