

## ● Background

Arduino is an open-source electronics prototyping platform based on flexible, easy-to-use hardware and software. It is a very useful and applied tools. We can find many code and sharing information from internet. Arduino development board has good scalability/ compatibility, and a wide range for application. So we can extend from the Arduino board of the modules all type what we need. It's intended for artists, designers, hobbyists and anyone interested in creating interactive objects or environments.

Arduino can be very easy to implement prototypes for the original design verification, but if you want a large-scale commercial applications, the price of Arduino is still too high, so there very little Arduino-based commercial products on the market.

So we released **MassDuino**, a new solution that is easy to use Arduino platform advantages, combined with low manufacturing costs , making the products which is developed on Arduino platform can be mass-produced immediately, quickly turn ideas into products.

## ● What's MassDuino

Massduino is a new product line, which combines the Arduino platform peripheral -rich, convenient and quick development, low-cost and easy to manufacture large-scale production advantages. Almost all of the Arduino code can be applied to MassDuino without modification, users do not need to learn any new knowledge, you can immediately begin using MassDuino to product development.

MassDuino use a special custom MCU MD-8088, this chip has a very unique and new design, ensuring high operating efficiency while providing a low cost of applications.

INHAOS upcoming a series of application modules which is based MassDuino. The application modules can be developed in the Arduino environment , and then direct used to commercial products, creative implementation and production time reduced to a minimum.

## ● MD-8088 specification

- 32 8-bit general-purpose working registers
- Performance when working in 32MHz up to 32MIPS
- Single-cycle hardware multiplier(8×8)
- Can be edited in the Arduino environment, concise and easy to use
- 504 bytes of data FLASH, support byte read (simulate E2PROM)
- 1K bytes SRAM on-chip
- 131 instructions, 80% instruction execution time for a single clock cycle
- Programmable synchronous / asynchronous USART
- Can work in master / slave mode SPI Serial Interface
- Support the expansion of the chip in-circuit debugging functions
- 8K bytes of in-system programmable FLASH, innovative data encryption technology
- By SWD interface programming for FLASH, EEPROM, system configuration area , the ISP function

- Up to 30 programmable I / O
- High-performance, low -power and low-cost
- I2C -compatible two-wire serial communication interface protocols , supporting master and slave device mode

## ● Specification Comparison

In this part, we use a Arduinio UNO R3 as a exmaple , and compare the MassDuino UNO LITE R4 with Arduino UNO R3, this will help users quickly understand the characteristics and advantages of our products.

Item	MassDuino UNO LITE R4	Arduino UNO R3
Main Processor	MD-8088	ATmega328
SRAM (Bytes)	1K	2K
Flash Memory (Bytes)	8K	32K
Maximum operating clock	32 MHz	16 MHz
Operating voltage	1.8-5.5V	5V
IO pin drive current MAX ( Output )	63.1mA	40 mA
IO pin drive current MAX ( Sink )	80mA	50 mA
Reference price (USD)	5.99 USD	17.50 USD

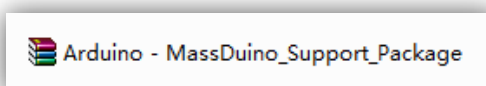
## ● How to use

We released an Arduinio 3rd-party hardware package for MassDuino , so you can download it from website ([www.inhaos.com](http://www.inhaos.com)) before using it , and put it in the appropriate location , then you can use it like to use any other Arduino board. The installation process is as follows.

- step1: Download the Arduino software from the official website and then install it on the computer.  
( Surport Arduino 1.0.X and Arduino 1.5.X )



- step2: Download the MassDuino surport package



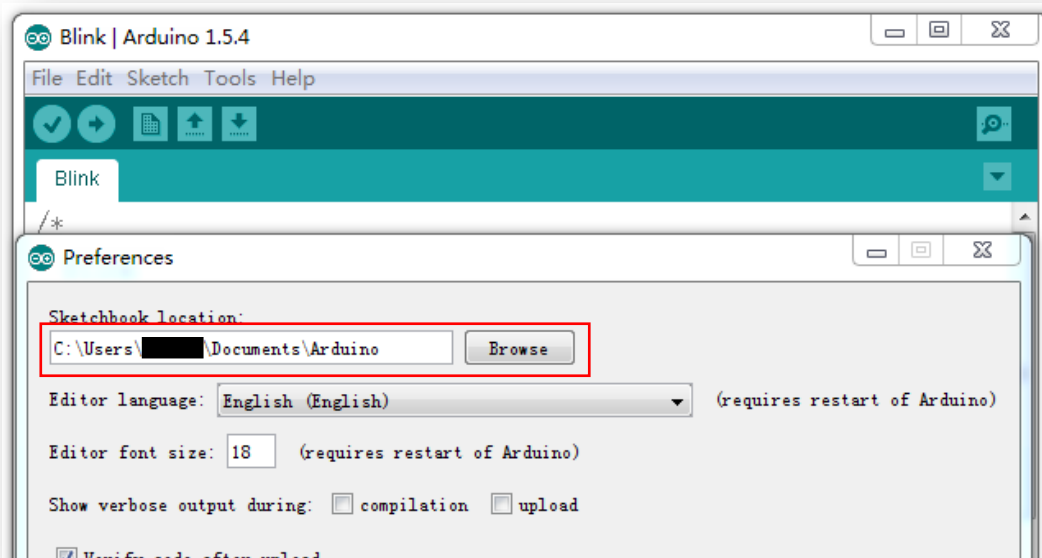
step3: Install MassDuino support package to Arduino IDE

PS: Before do this, please make sure your Arduino IDE is closed.

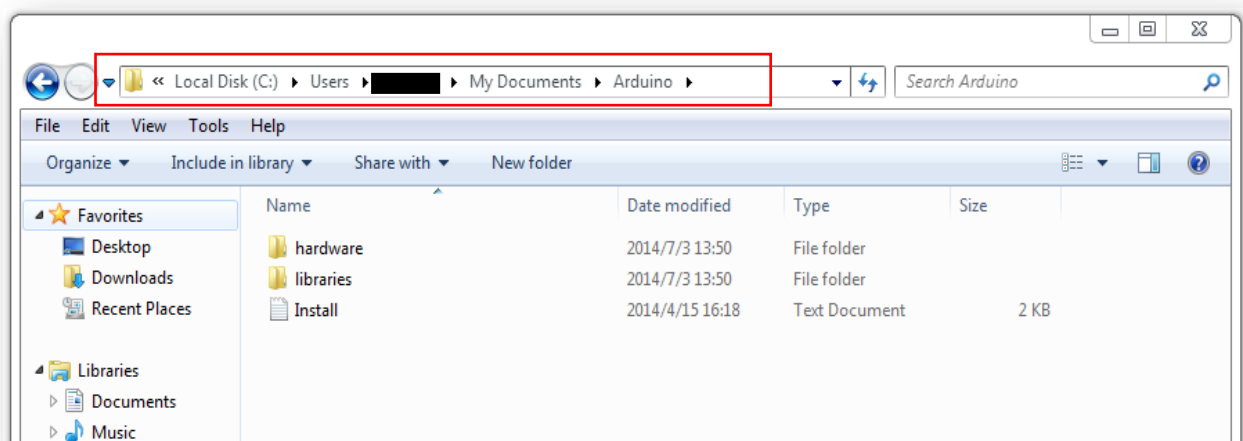
Unzip the support package file, and move the two Folders(libraries and hardware) to:

C:\Users\<USERNAME>\Documents\Arduino

You can check Arduino->File->Preferences to find your support file installation directory.



In my computer, the support package Installed here.

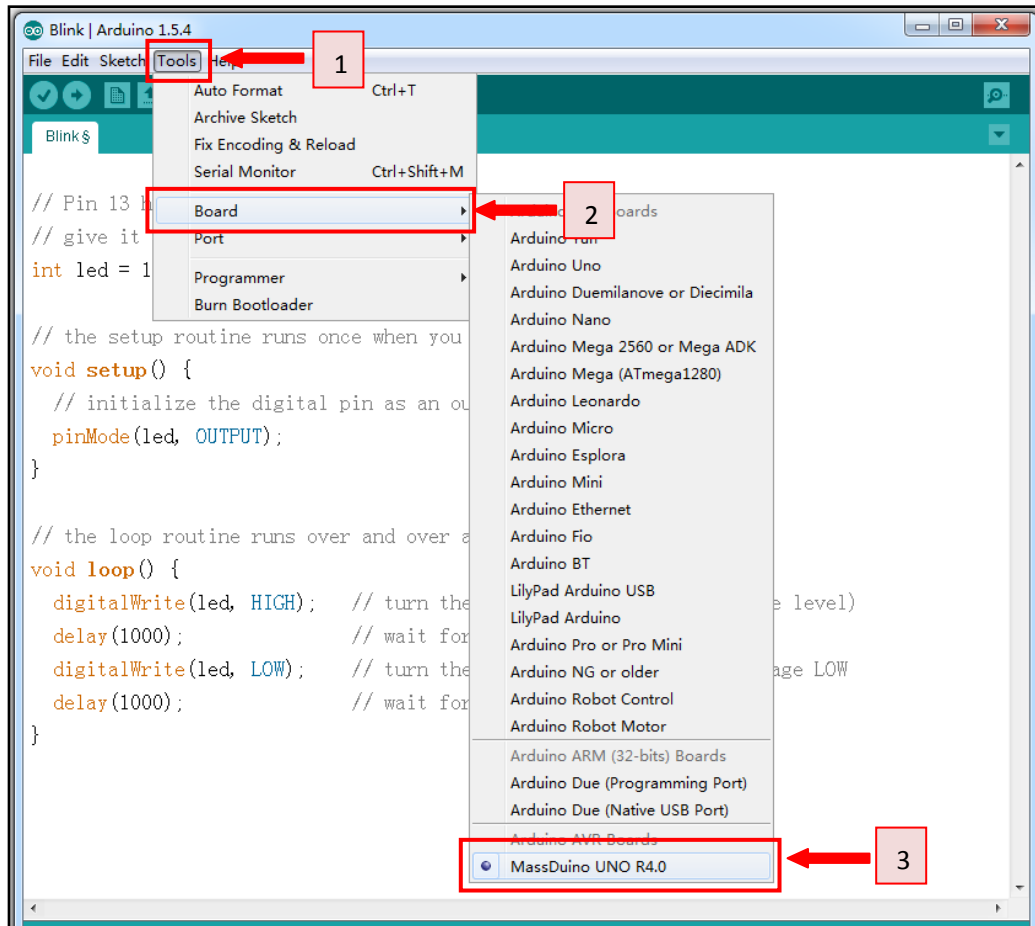


step4: Connect MassDuino board to your computer with a USB-Serial adapter and USB cable.

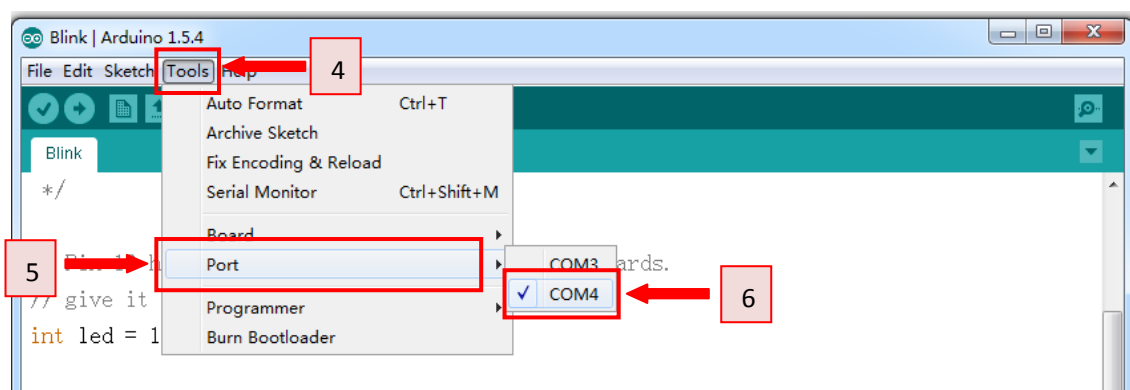
We will provided a dedicated converter, it is easy to use and quality guaranteed.

## ● My first MassDuino sketch

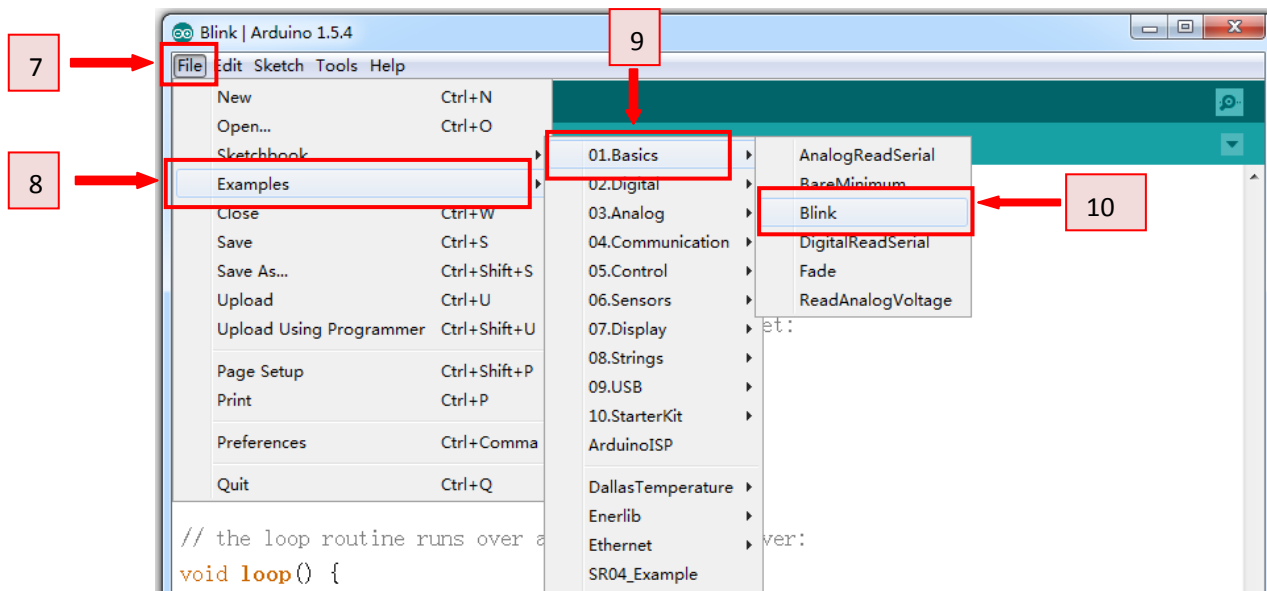
- 1) Open the Arduino IDE. Select the board: Click Tools -> Board -> MassDuino UNO R4.0



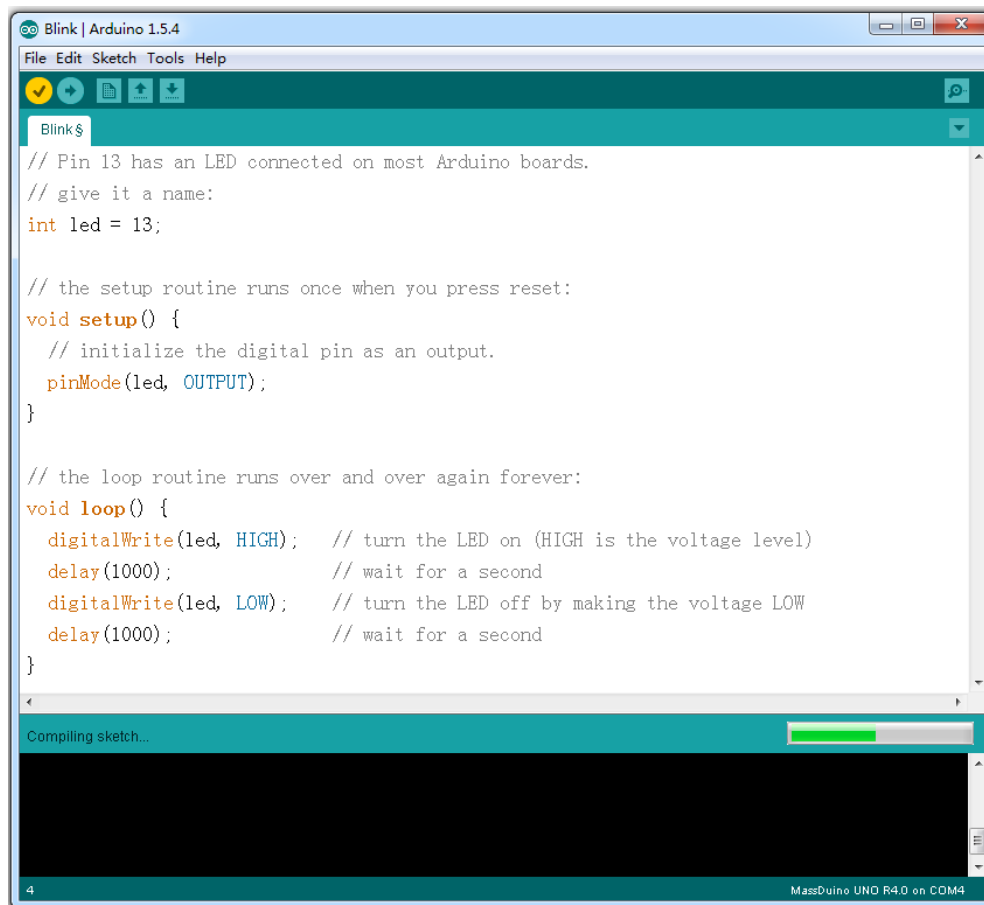
- 2) Select the COM: Click Tools -> Serial Port -> COM4(which connected with MassDuino.)



3) step6: An example of program: Click File -> Examples -> which you want.



4) step7: Upload the blink example to MassDuino.



5) Now you can see the LED on Pin13 is blinking according to the arduino code.

- MEMO

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