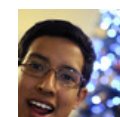


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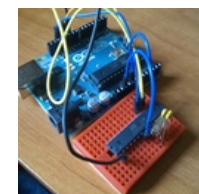
manu08
(/member/manu08/)

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More by manu08:



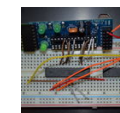
(/id/Burning-the-

Bootloader-on-ATmega328-using-Arduino-/)

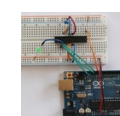
Related



The Easiest Way to Burn Bootloader into Atmega328P-PU (/id/The-Easiest-Way-to-Burn-Bootloader-into-Atmega328P-PU)



How to Burn Arduino Bootloader w/ Magnolia board (Cost and Size of Pack of Gum KickSt... (/id/How-to-Burn-Arduino-Bootloader-w-Magnolia-board)



Bootload an ATmega328 (/id/Bootload-an-ATmega328/) by AndyTallack (/member/AndyTallack/)



Burn BootLoader into ATmega328P using Arduino Diecimila (/id/Burn-BootLoader-into-ATmega328P-using-Arduino-Diecimila)



Burn Arduino Bootloader to ATMEGA328P-PU using Arduino Pro Mini (/id/Burn-Arduino-Bootloader-to-ATMEGA328P-PU-using-Arduino-Pro-Mini)

UPDATE 2: For everyone still having problems finding the previous versions of the software, please refer to this page:

<https://www.arduino.cc/en/Main/OldSoftwareReleases#previous>

UPDATE: This tutorial will work on Arduino IDE 1.0.1, the recent 1.0.5 makes some changes on the ISP sketch so I'm not sure if it will work (I just bought 2 ATmega328 and burned both on 1.0.1).

Please use 1.0.1 to eliminate any problems. Click Here (<http://arduino.googlecode.com/files/arduino-1.0.1-windows.zip>)


I had one remote controlled project that needed an Arduino running 24/7 but I didn't want to leave my \$32 Arduino UNO, so I decided to buy some pieces and

created my own Arduino. The most important part was buying the microcontroller. These were my options.

Burning the Bootloader on ATmega328 Using Arduino UNO As ISP

by manu08 (/member/manu08/) in arduino (/tag/type-id/category-technology/channel-arduino/)



Download  (id/Burning-the-Bootloader-on-ATmega328-using-Arduino-/) 5 Steps ▶

ATmega328P-PU with Optiboot ~ \$5.50 (Sparkfun) / \$5.19 (Digikey)

ATmega328P-PU ~ \$3.16 (Digikey)

ATmega328-PU ~ \$2.88 (Digikey)

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Obviously I bought the cheaper one, huge mistake. After some research I found that my first option was the straight one. Just plug it as a normal Arduino, the last two needed something else.

The last two options were missing something called a bootloader. A bootloader is “a small program that has been loaded on to the microcontroller. It allows you to upload code without using any additional hardware.”

So first if you were to do anything on those microcontrollers you need a bootloader *burned* on those chips. As you may have notice, the difference between the second and the third is just a mere **P** after the 328. This **P** means *pico* for picopower which is a technology ATMEL has developed that allows the microcontroller to run with less power.

Well if you see the microcontroller on your Arduino UNO you will find out that it is using the picopower micro, not the normal one. I bought 3 normal ones. OMG then I'm totally screw. Well no, you just have to make a pair of changes on your Arduino files to make it work.

This tutorial will teach you how.

Step 1: Materials



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manu08 (/member/manu08/) in arduino (/tag/type-id/category-technology/channel-arduino/)

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5 Steps

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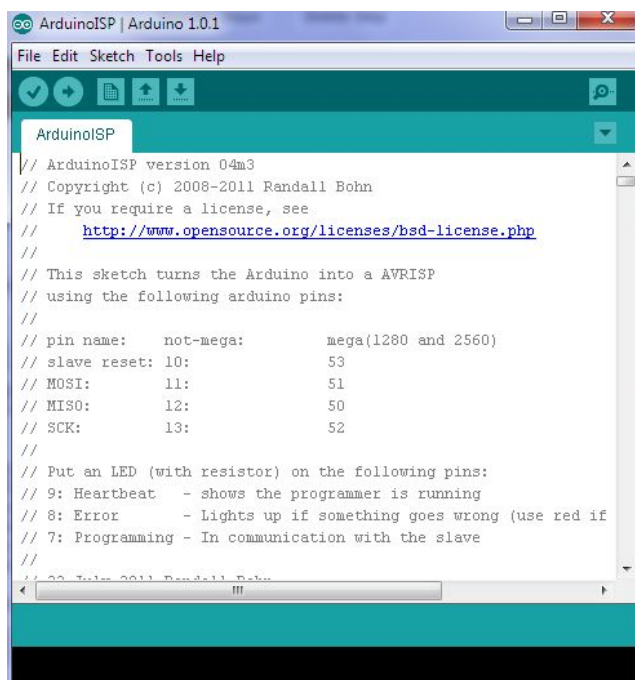
We will need the following materials:

- 1 USB cable to connect PC-Arduino
- 1 Arduino UNO (I'm using R1)
- 1 ATmega328-PU
- 1 Small breadboard
- 1 16Mhz Crystal (mine had 20pF of capacitance)
- 2 22pFCeramic Capacitors

... And some jumper wires

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Step 2: Setting Your Arduino As ISP



Burning the Bootloader on ATmega328 Using Arduino UNO As ISP

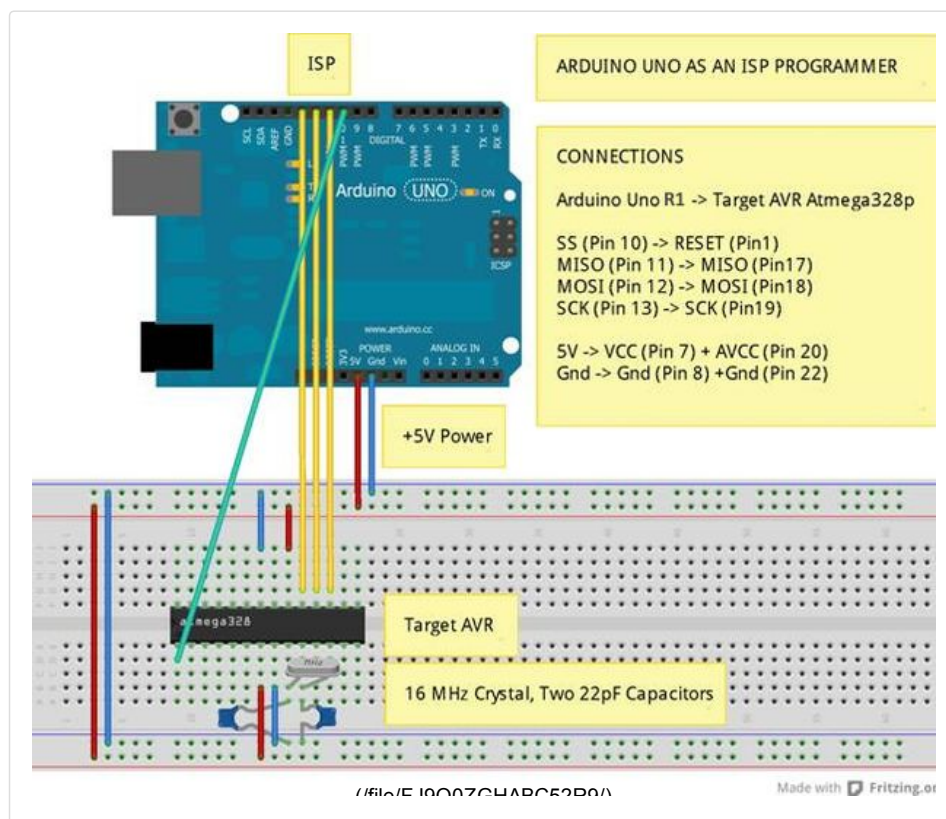


of the Arduino Software (IDE).
Download (/id/Burning-the-Bootloader-on-ATmega328-using-Arduino-/) 5 Steps ▶

1. Plug in your Arduino UNO through USB to your computer. (WITH NOTHING CONNECTED, JUST USB)
2. Open de IDE
3. Open > Examples > ArduinoISP
4. Select Arduino UNO from Tools > Board
5. Select your serial port from Tools > Board (Mine is usually COM3, but it may change.)
6. Upload sketch.

It takes a while. After it finishes, close de IDE and disconnect your Arduino. Now is time to prepare the software and hardware.

Step 3: Preparing the Hardware



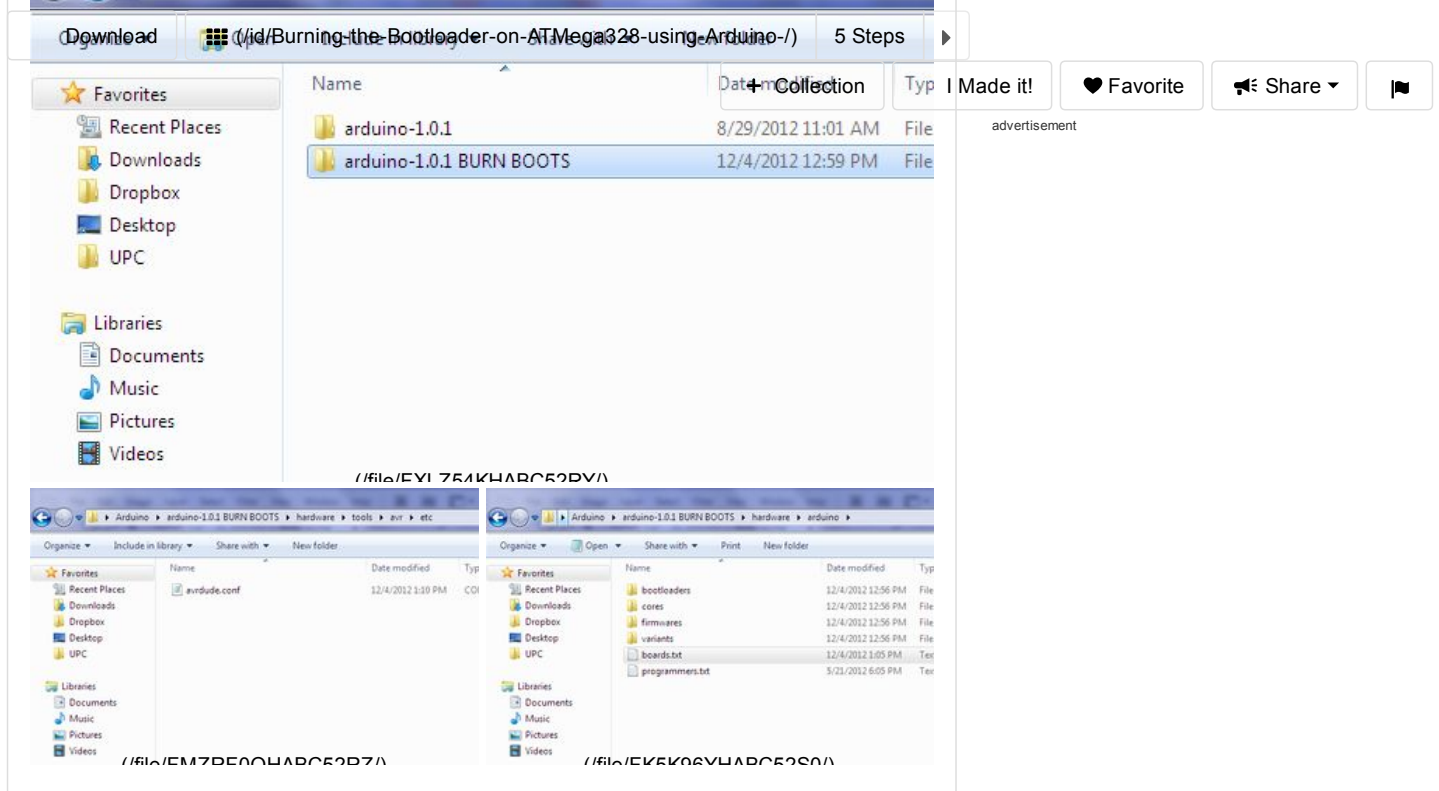
This is the easy part, just use the diagram to connect every piece.

Step 4: Preparing the Software

Burning the Bootloader on ATmega328 Using Arduino UNO As ISP by



manu08 (/member/manu08/) in arduino (/tag/type-id/category-technology/channel-arduino/)



Well this is not the easy part, but you just need to follow the instructions carefully. I've added 2 files, that you need to replace. Follow the instructions to replace.

0. Make sure your IDE is closed.
1. Make a copy of the complete folder where your IDE is. (I named mine BURN BOOTS)
2. Open the new folder.
3. Navigate to ...\\arduino-1.0.1 BURN BOOTS\\hardware\\tools\\avr\\etc
4. Find a file called avrdude.conf
5. Replace it with the file I attached. (You need to extract it first, Instructables didn't allow me to send it, so I had to compress it.)
6. Navigate to ...\\arduino-1.0.1 BURN BOOTS\\hardware\\arduino
7. Find a file called boards.txt
8. Replace it with the file I attached.
9. Close everything.

Excellent, now we only have to burn the bootloader and our cheapy micro will work just like a normal one.



boards.txt

oad (<https://cdn.instructables.com/ORIG/FD2/ULMS/HABC52S1/FD2ULMSHABC52S1.txt>)

(<https://cdn.instructables.com/ORIG/FD2/ULMS/HABC52S1/FD2ULMSHABC52S1.txt>)



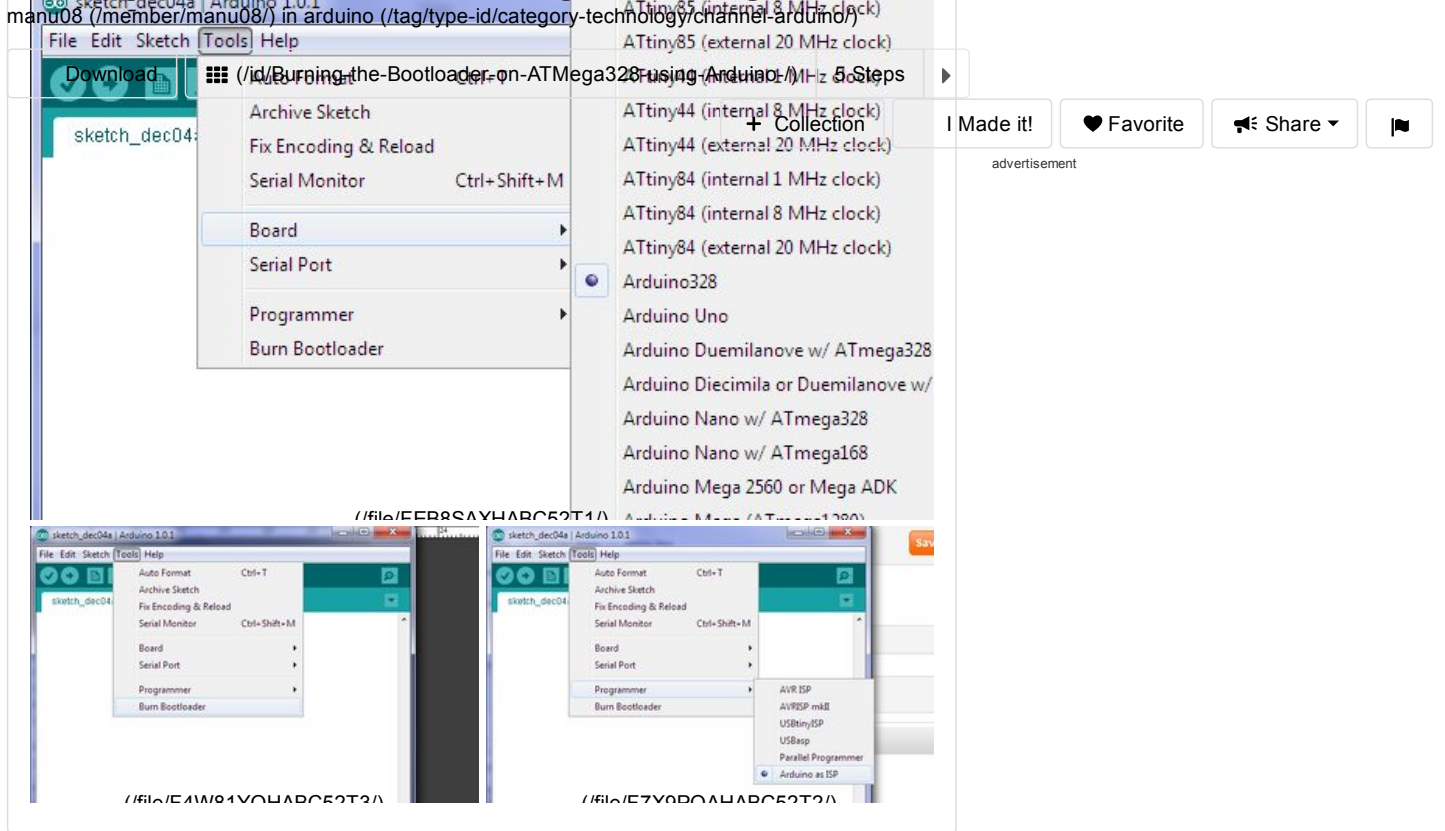
avrdude.rar

oad (<https://cdn.instructables.com/ORIG/FG2/NPVJ/HABC52S7/FG2NPVJHABC52S7.rar>)

(<https://cdn.instructables.com/ORIG/FG2/NPVJ/HABC52S7/FG2NPVJHABC52S7.rar>)

Step 5: Last Step!! Burning the BOOTLOADER

Burning the Bootloader on ATmega328 Using Arduino UNO As ISP by manu08 (/member/manu08/) in arduino (/tag/type-id/category-technology/channel-arduino/)



With everything connected open de IDE from the folder you just created (the copy).

1. Select Arduino328 from Tools > Board
2. Select your serial port (same as before).
3. Select Arduino as ISP from Tools > Programmer
4. Select **Burn Bootloader**

It will take like 30 seconds, and voila! You can now use your cheap, not pico, ATmega328 as a normal Arduino.

I hope you found this useful, if you do don't forget to click on fave.

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We have a be nice comment policy. Please be positive and constructive.

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sowais672 (/member/sowais672)

7 months ago

Arduino: 1.6.10 (Windows 7), Board: "Arduino328"

Error while burning bootloader: missing 'bootloader.tool' configuration parameter

This report would have more information with

"Show verbose output during compilation"

option enabled in File -> Preferences.

Burning the Bootloader on ATmega328P Using Arduino UNO As ISP

ArturP16 (/member/ArturP16) ▸ sowais672 (/member/sowais672) 7 months ago
manu08 (/member/manu08) ▸ ArturP16 (/member/ArturP16) type-id/category-technology/channel-arduino/

Download

if you have atmega328P-PU use optiloader (from github - fast and easy, works with 1.0.10) 5 Steps

if you have atmega328-PU use this tutorial but download arduino ide 1.0.5

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sowais672 (/member/sowais672) ▸ ArturP16 (/member/ArturP16)

Reply

but 1.0.5 is not available, I have search alot!!

7 months ago



ArturP16 (/member/ArturP16) ▸ sowais672 (/member/sowais672)

Reply

Ok, to make your work easier I made this

7 months ago

<http://www.filedropper.com/arduino105-boot328>

(<http://www.filedropper.com/arduino105-boot328>)

Download zip file. It is configured arduino ide 1.0.5. You dont have to do anything with files.

Just make connections, pick Board - arduino328, programmer arduino as ISP and press burn bootlader.

FIRTS of course upload Arduino ISP sketch to your arduino.



KHANI5 (/member/KHANI5) ▸ ArturP16 (/member/ArturP16) 17 days ago

Reply

thanks dude!!! that also worked for me..



MayurB22 (/member/MayurB22) ▸ ArturP16 (/member/ArturP16)

Reply

Hey thanks alot ! it worked for me very well :)

20 days ago



ArturP16 (/member/ArturP16) made it! ▸ sowais672 (/member/sowais672)

7 months ago

Reply

Did you check arduino website?:) Link

<https://www.arduino.cc/en/Main/OldSoftwareReleases...>

(<https://www.arduino.cc/en/Main/OldSoftwareReleases#previous>)

and screen if you dont trust me:)

| Version | Release Date | Download Link |
|---------|--------------|--------------------------|
| 1.0.5 | 2015-07-14 | Download |
| 1.0.4 | 2015-06-11 | Download |
| 1.0.3 | 2015-05-11 | Download |
| 1.0.2 | 2015-04-11 | Download |
| 1.0.1 | 2015-03-11 | Download |

(<https://cdn.instructables.com/FWG/KDFW/ITCHJ8UE/FWGKDFWITCHJ8UE.LARGE.jpg>)



sowais672 (/member/sowais672) ▸ ArturP16 (/member/ArturP16)

Reply

thankyou so much bro, I have just checked it.

7 months ago



manu08 (/member/manu08) (author) ▸ sowais672 (/member/sowais672)

Reply

Check out this page.

7 months ago

<https://www.arduino.cc/en/Main/OldSoftwareReleases#previous>

Burning the Bootloader on ATmega328 Using Arduino Uno As ISP

manu08 (/member/manu08) in arduino (/software/arduino-technology/boards/arduino/) removed once it has been "bootloaded".


Download

 (/id/Burning-the-Bootloader-on-ATMega328-using-Arduino-/) 5 Steps ▶


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★  **manu08 (/member/manu08)** (author) ▶ **BramS3 (/member/BramS3)** 9 months ago Reply advertisement

Yes sir, you are correct.

 **MohammadS79 (/member/MohammadS79)** 9 months ago Reply

I have uploaded bootloader successfully, but whenever i try to program atmega328 it shows error:

unkown MCU 'atmega 328 specified

known MCU Names:

avr2

at90s2313.....


MCU 'atmega328' supported for assembler only'

please help me.


 **19711 (/member/19711)** 10 months ago Reply

hi.i am mahdi.

After **Burn Bootloader to Atmega328PU**,i dont program it.how i can do it.?


 **RashidH4 (/member/RashidH4)** a year ago Reply

Thank you Sir so much, it worked through my current Arduino IDE but using you instruction... :) you great thumps up

 **Rama. RajagopalanR (/member/Rama. RajagopalanR)** a year ago Reply

Can any one help?.

Error while burning bootloader. I am using 1.6.5 version.


 **Rama. RajagopalanR (/member/Rama. RajagopalanR)** a year ago Reply

Can any one help?.

Error while burning bootloader. I am using 1.6.5 version.

 **razimudassir (/member/razimudassir)** a year ago Reply

Can i use 1.6.5 for this????

 **KornéIS (/member/KornéIS)** a year ago Reply

Can i burn the bootloader to an Atmega328(p) with raspberry pi? And then upload the sketches? If yes, how? I dont have usb to serial adapter. Thanks in advance, and sorry for my poor english

 **SajadS1 (/member/SajadS1)** a year ago Reply

Arduino: 1.5.6-r2 (Windows 8), Board: "Arduino328"


Error while burning bootloader: missing 'bootloader.tool' configurataion

Burning the Bootloader on ATmega328 Using Arduino UNO As ISP

by manu08 (/member/manu08/) in arduino (/tag/type-id/category-technology/channel-arduino/) how should I do?



Download

 (/id/Burning-the-Bootloader-on-ATmega328-using-Arduino-/)

5 Steps



TomášT11 (/member/TomášT11)

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a year ago

Reply

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Thank you very much. For me it worked. But I uploaded through my current "Arduino IDE" the arduinoISP sketch and then through your Arduino 1.0.1 only burned bootloader. But thanks.



psycho.maggot (/member/psycho.maggot)

a year ago

Reply

<https://www.youtube.com/watch?v=g90xb0nNX50>



JaskanwalS (/member/JaskanwalS)

a year ago

Reply

Arduino: 1.6.5 (Windows 8.1), Board: "Arduino328"

Error while burning bootloader: missing 'bootloader.tool' configuration parameter

pls help with this asap



biobuilder (/member/biobuilder)

2 years ago

Reply

Excellent job making the board profile, by the way!



biobuilder (/member/biobuilder)

2 years ago

Reply

Hey everyone, Here's a permanent way to fix the programming issue with ATME328 and still keep your UNO (ATME328P) programmable. You want the ATME328 device signature to be a Decimila. However, the Boards.txt file included with the standard copy of Arduino (1.6.3) has a typo, which you will have to fix if you want to seamlessly program your Decimila with ATME328 instead of ATME328P. Here's how you do it:

1. Find your Arduino Application
2. Go to Java, then hardware, then arduino, then avr, then find "boards.txt"
3. Make a copy of "boards.txt" in case you mess up
4. Find the line in "boards.txt" that says:

```
decimila.menu.cpu.atmega328.build.mcu=atmega328p
```

5. Backspace the "p" off of the line so it looks like this:

```
decimila.menu.cpu.atmega328.build.mcu=atmega328
```

6. save the txt file, restart Arduino, and you're Done!

Please note: Using this method will not allow you to simply plug the ATME328 into an old UNO shield and have it programmable via the USB cable. You will have to use a number of workarounds or program via ISP. It is possible to make your own board profile if you really want to do this, but chances are the ATME328 is destined for something other than a regular Arduino board.



Electronics King (/member/Electronics King)

2 years ago

Reply

burning arduino bootloader with USBasp Programmer complete set by step guide

<http://openelectronicsproject.blogspot.in/2015/08/...>

(<http://openelectronicsproject.blogspot.in/2015/08/burning-bootloader-on-atmega328-using.html>)

Burning the Bootloader on ATmega328 Using Arduino UNO As ISP

manu08 (/member/manu08) is a guide //tag/type-id/category/technology/channel/arduino/

(in my case 1.7.5. but will work on your own).

Download  [id/Burning-the-Bootloader-on-ATMega328-using-Arduino-/\) After making the connections as implied in this instructions.](#)

5 Steps



4 Collection Arduino Uno (if Made it!

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¶ Open your IDE, on the top left corner, click on Tools > Board > Arduino Uno (if you are using ATMEGA 328P).

¶ Now click on Tools > Port > select your correct port (in my case i was COM24).

¶ Again click on Tools > programmer > Arduino as ISP.

¶ Finally click on Tools > Burn bootloader.

Believe it after countless number of flashing it done.



hoboat33 (/member/hoboat33)

2 years ago

Reply

I'm also getting the "Invalid device signature" message. Verbose gives me the Device ID of 0x000000. Is my chip toast?



luqmaan_0013 (/member/luqmaan_0013)

2 years ago

Reply

Yikes! Invalid device signature.

Double check connections and try again, or use -F to override this check.

The connections are as per the diagram

I am using arduino 1.0.1 and atmega328 -pu .. i did not replace the files. please help.



BryanS6 (/member/BryanS6)

2 years ago

Reply

avrdude: Yikes! Invalid device signature.

Double check connections and try again, or use -F to override this check.



aditya jindal (/member/aditya jindal) ▶ **BryanS6** (/member/BryanS6)

Reply

This is because you are not using the arduino 1.0.1 version. If you use it to burn bootloader on atmega328 - pu you don't have to use the files attached

2 years ago



guiheol (/member/guiheol) ▶ **aditya jindal** (/member/aditya jindal)

Reply

I received the same message>

2 years ago

"avrdude: Yikes! Invalid device signature.

Double check connections and try again, or use -F to override this check."

I used the arduino 1.0.1 version and i tried with and without the files attached.

=/



RobinB1 (/member/RobinB1)

2 years ago

Reply

Thanks A bunch !

I followed the tutorial word-for-word and it worked.

Thanks Again

Burning the Bootloader on ATmega328 Using Arduino UNO As ISP by

manu08 (/member/manu08/) in arduino (/tag/type-id/category-technology/channel-arduino/)



prageen (/member/prageen)

2 years ago

3 Steps

Reply

i followed all the steps...n finally when I try to upload the bootloader I get the following error::

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Error while burning bootloader: missing 'bootloader.tool' configuration parameter

pls help me..



invenTHOR (/member/invenTHOR) ▶ prageen (/member/prageen)

Reply

2 years ago

I guess you have used a newer version of the Arduino IDE.
Make sure to use version 1.0.X !



Manirl (/member/Manirl)

2 years ago

Reply

**Other methods
did not work. The following one did.**

Google search "How to
burn bootloader"
Goto: <http://3g1l.com/blog-burn-bootloader-blank-atmega328atmega328p-arduino-uno> (<http://3g1l.com/blog-burn-bootloader-blank-atmega328atmega328p-arduino-uno>)
read the document and comments. Follow the link or directly open the next step.

Do the wiring as shown
at: <http://arduino.cc/en/Tutorial/ArduinoToBreadboard>
(<http://arduino.cc/en/Tutorial/ArduinoToBreadboard>)

Create a directory
named "optiLoader" preferably where your other Arduino or Processing sketches
are

Goto: <https://github.com/WestfW/OptiLoader>
(<https://github.com/WestfW/OptiLoader>)

Open "optiLoader.h",
select all, paste in Notepad and save as "optiLoader.h" in the optiLoader
directory
created in the previous step

Open "optiLoader.pde",
select all, paste in Notepad and save as "optiLoader.pde" in the optiLoader
directory created in the previous step. Instead of "pde" you may give
extension "ino", it doesn't make any difference

Open Arduino IDE, form
the IDE open "optiLoader.pde". If you gave "ino" extension, you may
doubleclick the icon, it will open in Arduino IDE

Select the proper
board, COM port and upload the sketch
Open the Serial Port

Monitor. Set the baud rate to 19200. If the 328Pee Poo is good,
connections are good, you should see the success message as described in
the optiLoader.txt file

If you need more 328P
PU to program, insert next one press "G" in the serial port, monitor
window, press enter.

Note:

- i) You NEED the oscillator and the capacitors.
- ii) Copy, paste and save the "optiLoader.txt" just for reference.
It is not necessary though.
- iii) If you download optiLoader-master.zip, you will get all three
files.
- iv) If the baud rate is not set to 19200, garbled message is
received.

aggelou.vakis (/member/aggelou.vakis)



When I try to upload the bootloader I get the following error: 2 years ago

Reply

Burning the Bootloader on ATmega328 Using Arduino UNO As ISP by



avrdude: Expected signature for ATMEGA328 is 1E 95 14
manu08 (/member/manu08/) in arduino (/tag/type-id/category-technology/channel-arduino/)

Double check chip, or use -F to override this check.

Download

(/id/Burning-the-Bootloader-on-ATmega328-using-Arduino-/)

5 Steps



I use an ATmega328P-PU. What I do wrong?

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bonbenk (/member/bonbenk) ▶ aggelou.vakis (/member/aggelou.vakis)

Reply

I have the same problem. It was solved by adding external power supply to my UNO

2 years ago



IsaiasD (/member/IsaiasD)

2 years ago

Reply

Hi,

I followed all the steps and instructions posted here and I couldn't burn the Atmega328, I got this "MCU 'atmega328' supported for assembler only-unknown MCU 'atmega328' specified". I'm using arduino IDE version 1.0.1 and arduino board R3. What can it be the problem?



3lwamakram100 (/member/3lwamakram100)

2 years ago

Reply

i did that with atmega328p-pu

but it didn't work on it there was an error although the wiring diagram was right !!!



JohnN3 (/member/JohnN3)

2 years ago

Reply

How do you download the files in the article? Sorry for my ignorance but I can open the text and copy paste, (will that work)? how do I get the rar down?



I3L4ck5h33p (/member/I3L4ck5h33p) ▶ JohnN3 (/member/JohnN3)

Reply

I use winrar but even still you should be able to download it and right click and extract the files. For the boards file I just opened the original selected all and pasted over everything from the Web page itself.

2 years ago



JohnN3 (/member/JohnN3) ▶ I3L4ck5h33p (/member/I3L4ck5h33p)

Reply

Thanks for that, I did get it down by changing browsers from IE to Chrome. Usually right clicking on component would give a menu with option of downloading but in this case not. Chrome simply downloaded it. I am however seeing conflicting statements in articles regarding the process of installing the bootloader, One article on the Arduino.cc website says that it works with the Duemilanove, and won't work using the Uno. I wanted to use the method using the chips internal clock since I'm still waiting for the necessary capacitors to add the external. but now I'm not sure it will work....any insight would be appreciated.

2 years ago



I3L4ck5h33p (/member/I3L4ck5h33p) ▶ JohnN3 (/member/JohnN3)


Reply


Sorry for the broken up/late reply to your question, but about the capacitors i'm going to take a shot in the dark. try using different value caps but as close as possible to the 22pF's. the crystal should be looking at them as in a series so i want to say by that each side is utilizing roughly 11pF (give or take) but keep in mind the probability of any stray capacitance (we'll just say around 9pF), I'm assuming the 22pF value was selected to take all that into account so it wouldn't be overwhelming nor being stingy with what it actually needs.

2 years ago

Burning the Bootloader on ATmega328 Using Arduino UNO As ISP

manu08 (/member/manu08/) in arduino (/tag/type-id/category-technology/channel-arduino/) 2 years ago

 Download boards.txt?

 (id/Burning-the-Bootloader-on-ATMega328-using-Arduino-/) 5 Steps ▶

I can't find them.

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I Made it!

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I3L4ck5h33p (/member/I3L4ck5h33p) ▶ abel.maktub (/member/abel.maktub)

2 years ago

Reply

They're under the steps 1 - 9 on this page.

<https://www.instructables.com/id/Burning-the-Bootloader-on-ATMega328-using-Arduino-/step4/Preparing-the-software/>



JohnN3 (/member/JohnN3) ▶ I3L4ck5h33p (/member/I3L4ck5h33p)

Reply

2 years ago

How do you get them down clean if I click on them they open.
The rar being compressed is well compressed lol.



kaledawit (/member/kaledawit)

4 years ago

Reply

Hello

I need to burn the Atmega328p-pu with arduino uno r3, and arduino 1.0.5 IDE or 1.0.1 When i try to upload the Arduino ISP sketch, Error happen this is

avrdude: stk500_getsync(): not in sync: resp=0x00
please help me I follow the instruction in the above and other fourm

my email kaledawitesmelealembd(at)gmail.com



I3L4ck5h33p (/member/I3L4ck5h33p) ▶ kaledawit (/member/kaledawit)

Reply

2 years ago

I'm sure by now you have already figured something out but I'll post a reply any ways....

Make sure you selected "Arduino as ISP"

Make sure the files he provided overwrites the originals and try selecting board type as "Arduino UNO" (not 328).

Worked for me flawlessly using the R3 board and the same chip you mentioned.



mbose2 (/member/mbose2) ▶ I3L4ck5h33p (/member/I3L4ck5h33p)

Reply

2 years ago

My 328p-pu probably came with the bootloader, but on uploading sketch it says yikes! invalid device signature and double check connections. Even on burning bootloader it gives same error. plz help me sir. It's urgent.



I3L4ck5h33p (/member/I3L4ck5h33p) ▶ mbose2 (/member/mbose2)

Reply

2 years ago

Do You know if you ordered it pre-loaded or not? Are you able to upload a sketch to it if you put the chip on the actual arduino board itself?

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Burning the Bootloader on ATmega328 Using Arduino UNO As ISP

manu08 (/member/manu08/) in arduino (/tag/type-id/category-technology/channel-arduino/)



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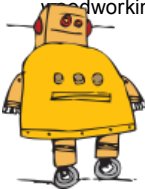
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