



How to Burn a Bootloader to Clone Arduino Nano 3.0



Hello everybody..

please support & share our mission:igg.me/at/smartplants
(igg.me/at/smartplants)

I have recently purchased an Arduino Nano 3.0 Clone which came without a bootloader. I am sure there are many other people who are in the same situation as me, and may have freaked out a little bit at first ! Don't worry, in this instructable I will show you how to easily install a bootloader to your new clone.

let's see how it's done..>

ATTENTION - some clones are different. they don't have an ftdi chip, which may cause your computer to not see the arduino once plugged in with the usb. if this is the case, please follow these steps; <https://www.instructables.com/id/How-To-Burn-a-Boot...> (<https://www.instructables.com/id/How-To-Burn-a-Bootloader-to-Clone-Arduino-Nano-30/?comments=all#CZM1P39I95GVRN0>) thanks to author Gegec (<https://www.instructables.com/member/Gegec/>) for his help on noticing the problem and solving it as well :)

Step 1: Get a Clone

advertisement

About This Instructable

183.875 views
 171 favorites

License:



Akin Yildiz
([/member/Akin+Yildiz/](#))
the Plant Doctor
(<http://igg.me/at/smartplants>)

([/member/Akin+Yildiz/](#)) **935**

Bio: Please support & share our mission;
<http://igg.me/at/smartplants> . the Plant Doctor is a non-profit, open source online research laboratory specializing in electronics+plants. Our vision is ... [More »](#)
([/member/Akin%20Yildiz/](#))

More by Akin Yildiz:

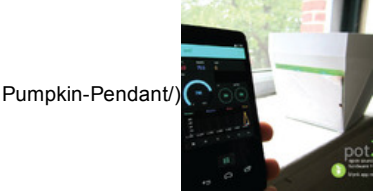


([/id/ROTLD-](#)

Inspired-Sign-With-App/)



([/id/Magnetic-](#)



Pumpkin-Pendant/)

([/id/Pot2/](#))

Related

Buying Guide for Arduino Uno
([/id/Buying-Guide-for-Arduino-Uno/](#))

How to Burn a Bootloader to Clone Arduino Nano 3.0

Akin Yildiz (/member/Akin+Yildiz/) in arduino (/tag/type-id/category-technology/channel-arduino/)

Download

(/id/How-To-Burn-a-Bootloader-to-Clone-Arduino-Nano-30/)

3 Steps

+ Collection

I Made it!

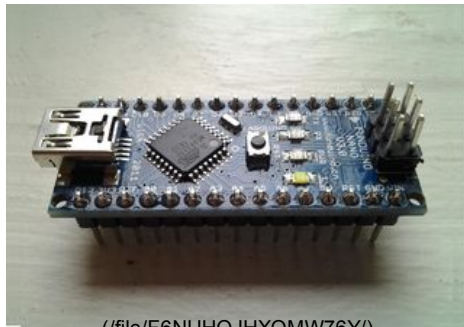
advertisement

Favorite

Share



(/file/EKH26A9HYOMW5GQ/)



(/file/E6N1UHQJHYOMW76Y/)



(/file/ECCG9TMHYOMW5GQ/)

It is very easy to find a clone of any board on the internet. Or you can at worst make yourself one...

They are extremely cheap, I have seen pinless nano boards as low as \$5 online. You just have to do some work on your end, which is a very fair give and take if you ask me.

I don't want to advertise any names here, if you just search the board that you want with the word clone next to it, you will find some. Mine is called Funduino Nano, which is an open source company apparently just making amazing products at real fair prices..

Look how small an arduino nano is, it's the size of my pinky finger. This will help me tremendously in my new projects, huge improvements on size!

advertisement

Step 2: Test It First !



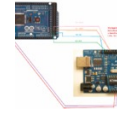
How to fix bad Chinese Arduino clones (/id/How-to-fix-bad-Chinese-Arduino-clones/)



Overview the Arduino sketch uploading process and ISP (/id/Overview-the-Arduino-sketch-uploading-process-and-ISP/)



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



How to use Arduino Mega 2560 as Arduino isp (/id/How-to-use-Arduino-Mega-2560-as-Arduino-isp/)

How to Burn a Bootloader to Clone Arduino Nano 3.0 by

Akin Yildiz (/member/Akin+Yildiz/) in arduino (/tag/type-id/category-technology/channel-arduino/)

Download Akin Yildiz/How-To-Burn-a-Bootloader-to-Clone-Arduino-Nano-30/()

3 Steps

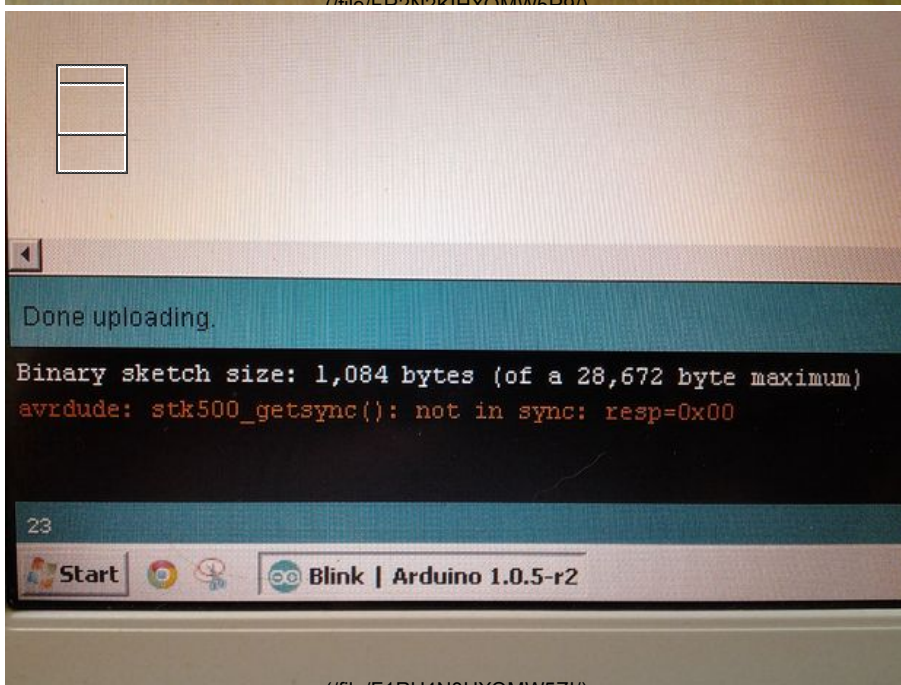
+ Collection

I Made it!

advertisement

♥ Favorite

🔊 Share ▾



Plug it to the computer with the USB cable.

Make sure it turns on, and yes it did.! So far we are safe.

Now try to upload the blink sketch to it using the Arduino software on your computer. (file>examples>basics>blink)

You will most likely get the error in the second picture. This has nothing to do with the code being right/wrong. It just simply means that your computer and the board aren't communicating correctly, in our case the lack of the bootloader prevents us from doing so.

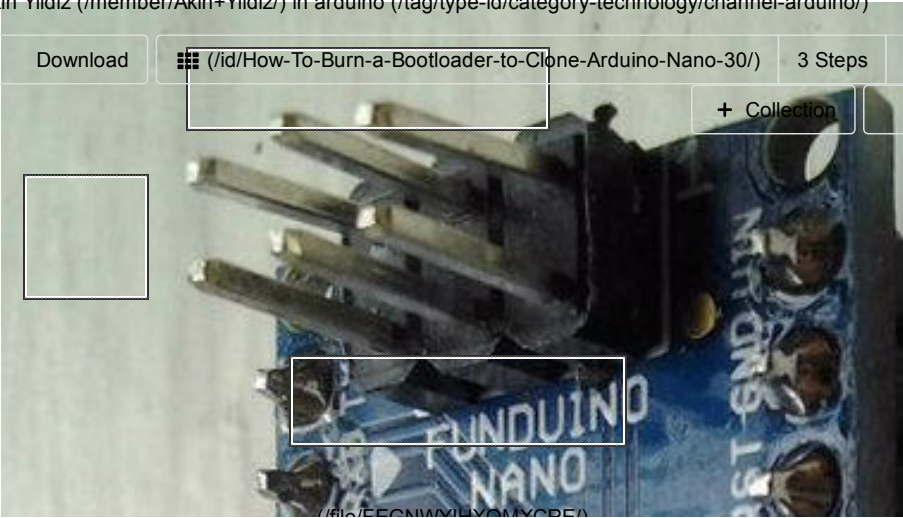
If your clone did work with the sketch upload, then even better.! you found one that is pre-installed. just start using it...







If you get the error message, keep on reading..>

Step 3: Simple Few Steps How to Burn a Bootloader to Clone Arduino Nano 3.0


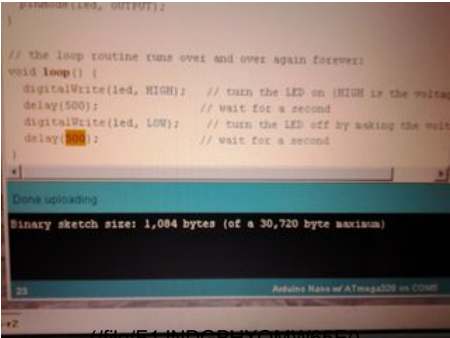
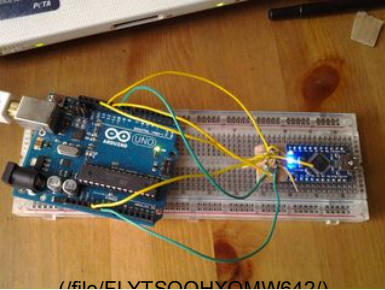
Akin Yildiz (/member/Akin+Yildiz/) in arduino (/tag/type-id/category-technology/channel-arduino/)

[Download](#) [\(/id/How-To-Burn-a-Bootloader-to-Clone-Arduino-Nano-30/\)](#) [3 Steps](#) [+ Collection](#) [I Made it!](#) [Favorite](#) [Share](#)



MISO	1			2	+VCC
SCK	3			4	MOSI
RST	5			6	GND

ICSP



Now you need to find a working arduino board, doesn't matter if it is a nano or not, I have used my "real" uno r3 and worked perfectly. If you don't already have one, try borrowing it from a friend.

If you have any grab your female - male breadboard jumpers. These will make the process even faster and easier. BUT I didn't have any so, instead of waiting 2 weeks for them to arrive online as well, I had to take some extreme measures!

First we need to locate and get familiar with the ICSP pins. On mine just one of them was marked with a number, top right as 1. Here is what they look like in the schematics (http://sysexit.files.wordpress.com/2013/02/icsp_pinout1.png). So right under 1 had to be 2 and next to one was 3 and so on...

Now that you are ready lets begin - do the following steps in order;

STEP 1 - Upload ISP

- Connect the **working** arduino to your computer.
- Open the arduino software on the computer
- Go to Tools>Serial Port>COM (and make sure that the correct COM port is chosen - ask me if you don't what this means)

How to Burn a Bootloader to Clone Arduino Nano 3.0

by Akin Yildiz (/member/Akin+Yildiz/) in arduino (/tag/type-id/category-technology/channel-arduino/)

- Go to File>Examples>Arduino ISP (a new sketch screen will open with the ISP code written in it) (/id/How-To-Burn-a-Bootloader-to-Clone-Arduino-Nano-30/) 3 Steps ▶

- Verify then Upload (your board will start blinking for a bit, it means it's loading, wait until done uploading)

- Unplug the arduino. Now it has the ISP code in it, all we have left to do is connect them together and run a few commands again...

STEP 2 - Connect 2 arduinos together

- Now connect the two arduinos together, to do this without female-male jumper cables was time consuming, you have to be VERY CAREFUL and take your time bending the wires, other wise you may short your circuits. ask me first ! In the second picture you can see that first I put the ICSP pins through a piece of paper and then carefully wrapped around them the corresponding wires. Make sure they grab on very tightly, use a small flat head screw driver to bend them. Take your time, don't be rough.

- Connect them this way;

pin 1 on clone to D12 on working arduino

pin 2 on clone to 5V on working arduino

pin 3 on clone to D13 on working arduino

pin 4 on clone to D11 on working arduino

pin 5 on clone to D10 on working arduino

pin 6 on clone to GND on working arduino

STEP 3 - Burn Bootloader

- Keeping all the wires intact and unmoved in step 2, connect the working arduino back to the computer with the USB

- Go to Tools>Serial Port>COM (and make sure again that the correct COM port is chosen - ask me if you don't what this means)

- Go to Tools>Board>Arduino Nano w/Atmega 328 (this time we choose the non working arduino, in my case nano atmega 328)

- Go to Tools>Programmer>Arduino as ISP

- Go to Tools>Burn Bootloader (this is it, after the LEDs stop flashing your board is ready to use !!!)

.

Do all of the above steps in **ORDER** !!! no skipping steps

Always make sure that the correct COMM port and correct board are chosen before uploading a sketch to avoid errors...

if you want to learn more or get a second opinion you can check this post (<http://sysexit.wordpress.com/2013/02/07/burning-a-bootloader-to-an-arduino-nano-using-another-arduino/>) (it's amazing) or just search on google " how to install a bootloader to arduino clone " and you will see many articles on this very topic.

.

Remember to check out my other posts and subscribe to stay in the loop..!

love & peace

akin (<https://www.instructables.com/howto/akin+yildiz/>),

How to Burn a Bootloader to Clone Arduino Nano 3.0 by

Akin Yildiz (/member/Akin+Yildiz/) in arduino (/tag/type-id/category-technology/channel-arduino/)

Download

(/id/How-To-Burn-a-Bootloader-to-Clone-Arduino-Nano-30/)

3 Steps



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

I Made it!

Add Images

Post Comment

+ Collection

I Made it!

Favorite

Share



Absolutelyautomation (/member/Absolutelyautomation)

14 days ago

Reply

Nano Compatible boards are now around USD \$2.5(
<http://s.click.aliexpress.com/e/UfQ7E62>
(<http://s.click.aliexpress.com/e/UfQ7E62>)) and have no more the "problematic
counterfeit" FTDI chip. Now are shipped with CH340G



prai753 (/member/prai753)

2 months ago

Reply

My laptop is not showing serial port what to do



Akin Yildiz (/member/Akin Yildiz) (author) ▶ prai753 (/member/prai753)

Reply

did you install the driver correct.? use a different USB cable, a
data transfer cable. Or you may have a faulty board :/ 2 months ago



TiagoT10 (/member/TiagoT10)

10 months ago

Reply

i tried it but i get this error "

avrdude: Yikes! Invalid device signature.

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

this check.

Error burning bootloader"

i have checked my wiring countless times!!!

Help me



petesk8 (/member/petes8) ▶ TiagoT10 (/member/TiagoT10)

Reply

Belated reply to this post, I too had this problem.

3 months ago

It turned out in my case that my Nano clone ATmega168 had a differing
signature to the one in the avrdude.conf file. (0x1e 0x94 0x06 when it
should have been 0x1e 0x94 0x0b a subtle typo). I edited the conf file to
suit , retried and it uploaded ok.

However , I suspect any other ATMega168 boards with the correct
signature (assuming original conf is correct) will now fail until I reset the
file.

FYI use file->preferences->settings tab to enable verbose mode when
compiling or uploading sketches etc for more detailed messages.



aclertant (/member/aclertant) ▶ petesk8 (/member/petes8) 2 months ago

Reply

hi thanks for your help :)

But where is the avrdude.conf file ?

tk

How to Burn a Bootloader to Clone Arduino Nano 3.0

Akin Yildiz (/member/Akin+Yildiz/) in arduino (/tag/type-id/category-technology/channel-arduino/) 11 months ago

I got the error too, but it worked anyways, try connecting it

Download

now (/id/How-To-Burn-a-Bootloader-to-Clone-Arduino-Nano-30/)

3 Steps

+ Collection

I Made it!

Favorite

Share



Akin Yildiz (/member/Akin Yildiz) (author) ▶ TiagoT10 (/member/TiagoT10)

10 months ago

Reply

i've never seen this error before, might be a faulty board.. i suggest upgrading to nodemcu board, \$5 onboard wifi; <http://r.ebay.com/eNb51K> (<http://r.ebay.com/eNb51K>)



Shivannng Puri (/member/Shivannng Puri)

2 months ago

Reply

hi

i keep getting this error

Arduino: 1.6.12 (Windows 7), Board: "Arduino/Genuino Uno"

avrdude: Error: Could not find USBtiny device (0x1781/0xc9f)

Error while burning bootloader.

This report would have more information with

"Show verbose output during compilation"

option enabled in File -> Preferences.



HarshK53 (/member/HarshK53)

3 months ago

Reply

Hey I tried to do as you said but mine error says:

avrdude: verification error; content mismatch

Error while burning bootloader.

please help



Akin Yildiz (/member/Akin Yildiz) (author) ▶ HarshK53 (/member/HarshK53)

3 months ago

Reply

sorry not familiar with this error, suggest doing a google research :/



PauloL15 (/member/PauloL15)

3 months ago

Reply

Many thanks Akin. Your trick works very well. My arduino nano had stopped working after an incorrect manipulation of an array size. After I have fixed the bootloader it works fine. Thank you again.



Akin Yildiz (/member/Akin Yildiz) (author) ▶ PauloL15 (/member/PauloL15)

3 months ago

Reply

great news.!! and yes they do get confused sometimes and need a reboot :)



JahanR (/member/JahanR)

4 months ago

Reply

Thank you so much, Akin. I had been struggling with this problem for a long time (several years, in fact). Your tutorial helped me get the clone to work and I can continue to use this instead of the Uno (it's a lot cheaper and smaller). Once again, many thanks!

How to Burn a Bootloader to Clone Arduino Nano 3.0

Akin Yildiz (/member/Akin+Yildiz/) in arduino (/tag/type-id/category-technology/channel-arduino/) 4 months ago
thank you very much, glad to hear it helped out.!!

Download

(/id/How-To-Burn-a-Bootloader-to-Clone-Arduino-Nano-30/)

3 Steps



ShehzadM2 (/member/ShehzadM2) made it!

+ Collection
4 months ago

I Made it!

Favorite

Share



i recive this error while burning the boot loader to nano 3.0 i did every thing right
i need help.



(https://cdn.instructables.com/FB7/KKGO/IWWFW748/FB7KKGOIWWFW748.LARGE.jpg)



Akin Yildiz (/member/Akin Yildiz) (author) ▶ ShehzadM2 (/member/ShehzadM2)

4 months ago

Reply

do you check the correct COM port and Board from
Tools menu.? this error usually suggests one of these options is selected
wrong.



f4hmie (/member/f4hmie)

6 months ago

Reply

many thanks Akin, I thought I had Bought broken arduino nano :D



Akin Yildiz (/member/Akin Yildiz) (author) ▶ f4hmie (/member/f4hmie)

Reply

6 months ago

i should count how many times people say that :)
honestly its very hard to break arduinos, and if you think you did break it,
just follow these steps again. most likely it will come back to life, unless
you really did burn smtg electrical. thank you for the interest. please check
out my main project & share; https://igg.me/at/smartplants/
(https://igg.me/at/smartplants/)



cityboy2 (/member/cityboy2) ▶ Akin Yildiz (/member/Akin Yildiz)

Reply

4 months ago

I did it, thanks.



TimL63 (/member/TimL63)

5 months ago

Reply

I ran into a problem, getting error: avrdude: Error: Could not find USBtiny device
(0x2341/0x49)

The problem was: : "ArduinoISP" versus "Arduino as ISP" for the programmer
choice.



Akin Yildiz (/member/Akin Yildiz) (author) ▶ TimL63 (/member/TimL63)

Reply

5 months ago

thank you for sharing the solution!!



RaduS15 (/member/RaduS15)

6 months ago

Reply

Hey,

How to Burn a Bootloader to Clone Arduino Nano 3.0

not in sync: resp=0x00 Any advice would be greatly apreciated

 (/id/How-To-Burn-a-Bootloader-to-Clone-Arduino-Nano-30/)

I Made it!

🔊 Share ▼

Akin Yildiz (/member/Akin Yildiz) (author) ▶ **RaduS15 (/member/RaduS15)**

Reply

Thank you! It made my nano clones usable.



Reply

Thanks, this helped a lot with my nano clones.

Akin Yildiz (/member/Akin Yildiz) (author) ▶ DarkEvERaider

(/member/DarkEvERaider)

7 months ago

Reply

great to hear that, hope you get some cool projects done :)

Half-Life (/member/Half-Life)

8 months ago

Reply

@akin please update the tutorial with this image:



Akin Yildiz (/member/Akin Yildiz) (author) ▶ **Half-Life (/member/Half-Life)**

Reply

done, thank you :)

8 months ago



8 months ago

Reply

massive thank you, got my nano up and running in minutes

Akin Yildiz (/member/Akin Yildiz) (author) ▶ **BenjaminG64 (/member/BenjaminG64)**

8 months ago

Reply

great news.!! thank you for checking it out



JohnD184 (/member/JohnD184)

9 months ago

Reply

How to Burn a Bootloader to Clone Arduino Nano 3.0

I have been beating my head against the proverbial wall for a week trying to get this dumb arduino nano to work! most things I've found until now have just said to install the driver for the chinese knock off. One of them worked. The other places said to hit reset right before you hit download, but that didnt work either. Turned out it just didnt have a boot loader pre-installed! duh! so THANK YOU! THIS WAS A FANTASTIC TUTORIAL! solved all my issues... well.. at least the ones I was having with this board.. lol

Download this driver for the chinese knock off. One of them worked. The other places

Collection

I Made it!

advertisement

Favorite

Share



Akin Yildiz (/member/Akin Yildiz) (author) ▶ JohnD184 (/member/JohnD184)

8 months ago

Reply

:) no head beating anymore.. glad it worked out for you!!



Payoff (/member/Payoff)

8 months ago

Reply

wow thank you! This worked for my 3 Arduinos with an CH340G Chip. I followed also an Tutorial that use only the PWM Ports and the Reset Port, but that didn't worked for me. The ISCP way worked like a sharm!



Akin Yildiz (/member/Akin Yildiz) (author) ▶ Payoff (/member/Payoff)

Reply

8 months ago

nice, great to hear it worked out.!!



aschoots (/member/aschoots)

9 months ago

Reply

Thank you so much! Mine worked but stopped working for some reason, this fixed it!



marzsolt (/member/marzsolt)

9 months ago

Reply

Ok, I've been fighting with this thing more than I wanted to. I tried downloading drivers for all my systems (El Cap, Win10, Debian) - none of them seemed to work. The board just wouldn't get recognized. Then I found this article - so I tried to burn the bootloader, with success! Though when it came to test it again through the USB port, the serial wouldn't show up.

Turns out - the USB to mini USB cable I've been using is not good enough! I had this (working) cable that I used to charge a bunch of my gadgets, but apparently it's not good enough for the Arduino. So by switching to my (expensive) GoPro USB cable, lo and behold, it started working!

I got 3 nanos from China, but after I found out the cable was the problem, I tried all of them and they all had bootloaders and everything was working out of the box. I didn't even need to install a driver on my linux machine (Pine64), was working as is.

If you're having issues like me - just get a better cable!!



Akin Yildiz (/member/Akin Yildiz) (author) ▶ marzsolt (/member/marzsolt)

Reply

9 months ago

yes very important issue.. you cable is not "bad" it just designed for charging.

there are two types of usb cables. ones just to charge devices and others that can charge & transfer data. if you want to buy online, you have to search for "usb data cable" and it will work :)

MilosG7 (/member/MilosG7)



Thank you! It worked for me!

9 months ago

Reply

How to Burn a Bootloader to Clone Arduino Nano 3.0

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

You can juts connect it directly:

working arduino pin 13 to pin 13 of bricked arduino

working arduino pin 12 to pin 12 of bricked arduino

working arduino pin 11 to pin 11 of bricked arduino

working arduino pin 10 to pin RST of bricked arduino

GND to GND, and VCC to VCC

3 Steps

+ Collection

I Made it!

Favorite

Share



Akin Yildiz (/member/Akin Yildiz) (author) ▶ MilosG7 (/member/MilosG7)

Reply

nice to hear that it worked. great tip about the ICSP pins :).

9 months ago



SamaraB2 (/member/SamaraB2)

10 months ago

Reply

Really work, but in the third step, I selected the arduino working, not the nano.



tobiass25 (/member/tobiass25)

10 months ago

Reply

Everything works... except, when I connect the 2 arduinos together and plug the working one in, the lights on it stop and im unable to select the port. It is basically like I connected it directly with the USB on the nano (unworking)



Akin Yildiz (/member/Akin Yildiz) (author) ▶ tobiass25 (/member/tobiass25)

10 months ago

Reply

sounds like there is a shorting cable. check wiring and be careful. does it work on its own but once plugged in it turns off.? either wiring is wrong and its shorting out somewhere or you may have a faulty board. i've had this happen to me before as well



altekalt (/member/altekalt)

10 months ago

Reply

I saved two frozen up nano clones due to this. in the future i will burn the bootloader before i use the clones i purchase from the eastward junkyards, thanks.



Akin Yildiz (/member/Akin Yildiz) (author) ▶ altekalt (/member/altekalt)

Reply

very nice, yea its a good idea to do that :)

10 months ago



Gegec (/member/Gegec)

2 years ago

Reply

I first thought it was the bootloader...I followed your steps but with no results.

The nano doesn't get displayed on the computer...all it does is flashing the led. (shorter, unlike in the blink sketch).

Could you help me?



Gegec (/member/Gegec) ▶ Gegec (/member/Gegec)


2 years ago

Reply

Sorry, nearly 5 min later I solved the problem by myself. On my clone, there isn't an ftdi chip, there's a clone to. Its an CH340G. I just needed to install its driver. Now its working. Anyway, thanks for doing this instruction, now I burned the bootloader twice ;-)



Akin Yildiz (/member/Akin Yildiz) (author) ▶ Gegec (/member/Gegec)





i actually have the same issue with a few of my clones. 2 years ago


How to Burn a Bootloader to Clone Arduino Nano 3.0

Akin Yildiz (/member/Akin Yildiz) (/tag/type-id/category-workshop/channel-arduino/) 2 years ago

Download

 (/id/How-To-Burn-a-Bootloader-to-Clone-Arduino-Nano-30/) 3 Steps





Gegec (/member/Gegec) ▶ Akin Yildiz (/member/Akin Yildiz) 2 years ago


Collection

Reply

I Made it!

Favorite

Share



Here's the Link : http://www.wch.cn/download/CH341SER_ZIP.html
Just click download, unzip the file, open the setup file, click install, wait for the notification and there u go! The computer will now see the nano, and it gets a COM port!
Of course this only works for ch340/1 chips, but it works! I've already tried to install it on 3 computers, it always worked! (Windows 7)



ChristopherE7 (/member/ChristopherE7) ▶ Gegec (/member/Gegec) 10 months ago

Reply

Ahhh that you so much for this fix!! I thought my Nano was going to be useless with my mac!

 More Comments

advertisement

FEATURED CHANNELS

Woodworking (/tag/type-id/category-workshop/channel-craft/channel-woodworking/)

Paper (/tag/type-id/category-workshop/channel-craft/channel-paper/)

Kitchen Hacks (/tag/type-id/category-workshop/channel-craft/channel-kitchen%20hacks/?sort=FAVORITES)

Puzzles (/tag/type-id/category-workshop/channel-craft/channel-puzzles/)

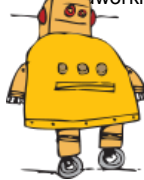
Laser Cutting (/tag/type-id/category-workshop/channel-craft/channel-laser-cutting/)

Space (/tag/type-id/category-workshop/channel-craft/channel-astronomy/?sort=FAVORITES)

Homesteading (/tag/type-id/category-workshop/channel-craft/channel-homesteading/)

3D Printing (/tag/type-id/category-workshop/channel-craft/channel-3D-Printing/)

Sewing (/tag/type-id/category-workshop/channel-craft/channel-sewing/)



Newsletter

Let your inbox help you discover our best projects, classes, and contests. Instructables will help you learn how to make anything!

enter email

I'm in!

About Us

Who We Are (/about/)

Advertise (/advertise/)

Contact (/about/contact.jsp)

Jobs (/community/Positions-available-at-Instructables/)

Help (/id/how-to-write-a-great-instructable/)

Find Us

Facebook (<http://www.facebook.com/instructables>)

Youtube (<http://www.youtube.com/user/instructablestv>)

Twitter (<http://www.twitter.com/instructables>)

Pinterest (<http://www.pinterest.com/instructables>)

Google+ (<https://plus.google.com/+instructables>)

Resources

For Teachers (/teachers/)

Artists in Residence (/air)

Gift Premium Account (/account/give?source=footer)

Forums (/community/)

Answers (/tag/type-question/?sort=RECENT)


Sitemap (/sitemap/)

Terms of Service (<http://usa.autodesk.com/adsk/servlet/item?siteID=123112&id=21959721>) |

Privacy Statement (<http://usa.autodesk.com/adsk/servlet/item?siteID=123112&id=21292079>) |

Legal Notices & Trademarks (<http://usa.autodesk.com/legal-notices-trademarks/>) |

Mobile Site (<https://www.instructables.com>)



(<http://usa.autodesk.com/adsk/servlet/pc/index?id=20781545&siteID=123112>)

© 2016 Autodesk, Inc.