

DOTKLOK Usage Instructions

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www.aomalley.org/dotklok | www.andrewomalley.etsy.com

Thanks for purchasing a DOTKLOK! Below you will learn everything you need to know about using DOTKLOK, along with info for re-programming it.

Powering DOTKLOK

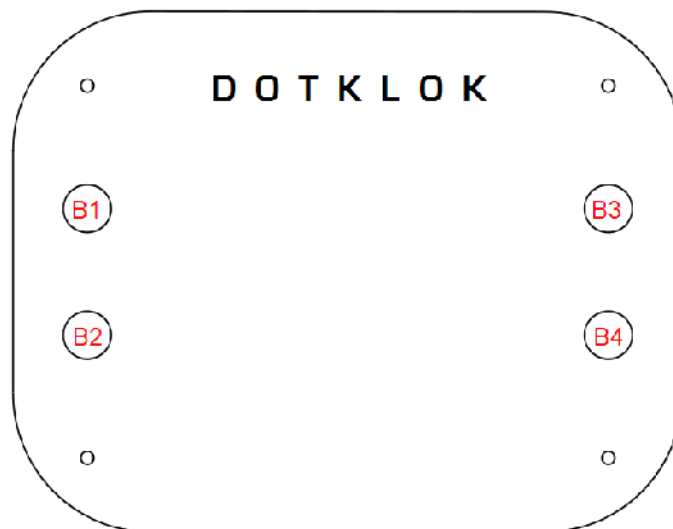
Make sure to only use the power supply that came with DOTKLOK.

If you must replace it, ensure that it is **5Vdc only**, with a 2.0 or 2.1 mm center positive barrel. **Using a power supply greater than 5V WILL DAMAGE YOUR DOTKLOK.**

When powering up DOTKLOK, it will briefly show the software version (eg. 1.1) on the display before showing the time. If your DOTKLOK does not show a version number, your DOTKLOK is running software version 1.0 or older, and you should consider updating to the latest version found at www.aomalley.org/dotklok.

Navigating DOTKLOK

To change the animations of DOTKLOK, use buttons B3 and B4:



By setting the switch on the back (B5) to the up position, random mode is enabled. When in random mode, DOTKLOK will randomly choose a new animation each day at midnight. With the back switch (B5) in the lower position, DOTKLOK will remain in the animation you have selected with B3 and B4.

Setting DOTKLOK

To set the time, make sure you are in the first animation:



[NOTE: as of code version 1.3, the first animation has been replaced with a much larger font; the functionality is the same, however.]

While holding B1, use B3 and B4 to change the hour. While holding B2, use B3 and B4 to change the minutes.

To toggle between 12 hour and 24 hour modes: while in the first animation as shown above, hold down both B1 and B2 at the same time. While some animations are available in both 12 and 24 hour modes, some animations are always either in one mode or the other.

To set the date, make sure you are in the second animation:



While holding B1, use B3 and B4 to change the month. While holding B2, use B3 and B4 to set the day. To change the year, hold both B1 and B2 at the same time, and use B3 and B4 to increase or decrease it.

Setting the brightness

As of code version 1.3, you can set the brightness of the DOTKLOK screen.



Within the “seconds” animation, the brightness can be adjusted with B3 and B4 when B1 is held down. There are five levels of brightness, and the level you chose here will remain for all the other animations.

Cleaning your Klok

The acrylic surfaces of DOTKLOK should only be cleaned with a soft, lint-free cloth, preferably a microfiber cloth, to avoid scratching. Finger prints can be removed by fogging the acrylic surface with your breath, then gently wiping with a lint-free or microfiber cloth. Light scratches in the acrylic can be buffed away with a damp cloth and toothpaste – this article explains the technique well: <http://www.unplggd.com/unplggd/hacks/remove-screen-scratches-with-toothpaste-142675> – commercial acrylic cleaning/buffing solutions also exist, such as the Novus products: www.novuspolish.com/

Sharing DOTKLOK

Code, pictures, comments, questions, etc. relating to DOTKLOK can be shared at the DOTKLOK Facebook page: www.facebook.com/dotklok

Programming DOTKLOK

While your clock has been pre-programmed with several animations, it can be re-programmed anyway you like with the Arduino IDE. The most recent version of the DOTKLOK code can be found at www.aomalley.org/dotklok. Download the source folder provided there, and follow the instructions in the “readme.txt” file for placing the various folders in the Arduino IDE.

In order to upload code to DOTKLOK, you will need an FTDI cable:

<http://www.sparkfun.com/products/9718> or

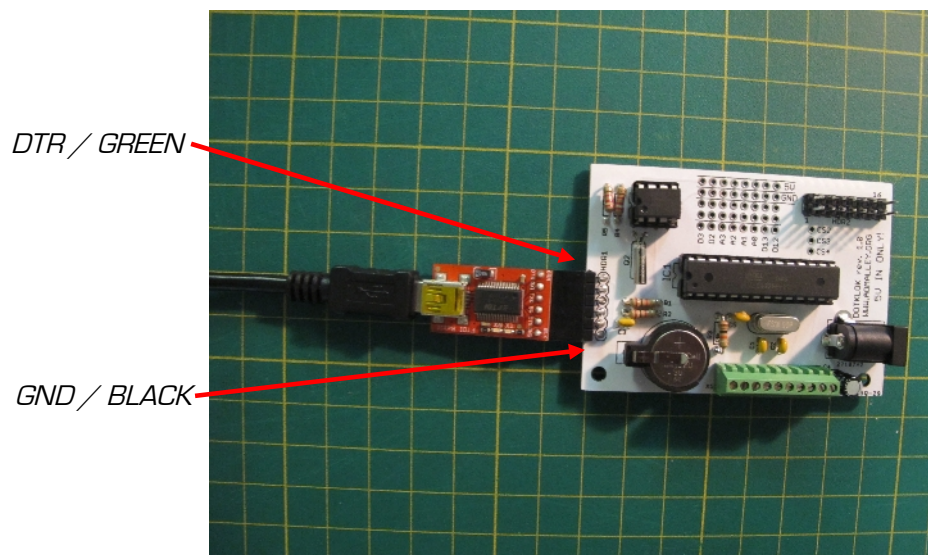
http://www.adafruit.com/index.php?main_page=product_info&cPath=18&products_id=70

or a 5V USB-to-serial converter:

<http://www.sparkfun.com/products/9716> or

http://www.adafruit.com/index.php?main_page=product_info&cPath=42&products_id=284

To connect the FTDI or USB-to-serial cable to the DOTKLOK PCB, disconnect the power supply and make sure the cable is connected to HDR1 accordingly [NOTE: although the photo below shows the PCB removed from the case, this is for clarity only, the PCB does not need to be removed for reprogramming]:

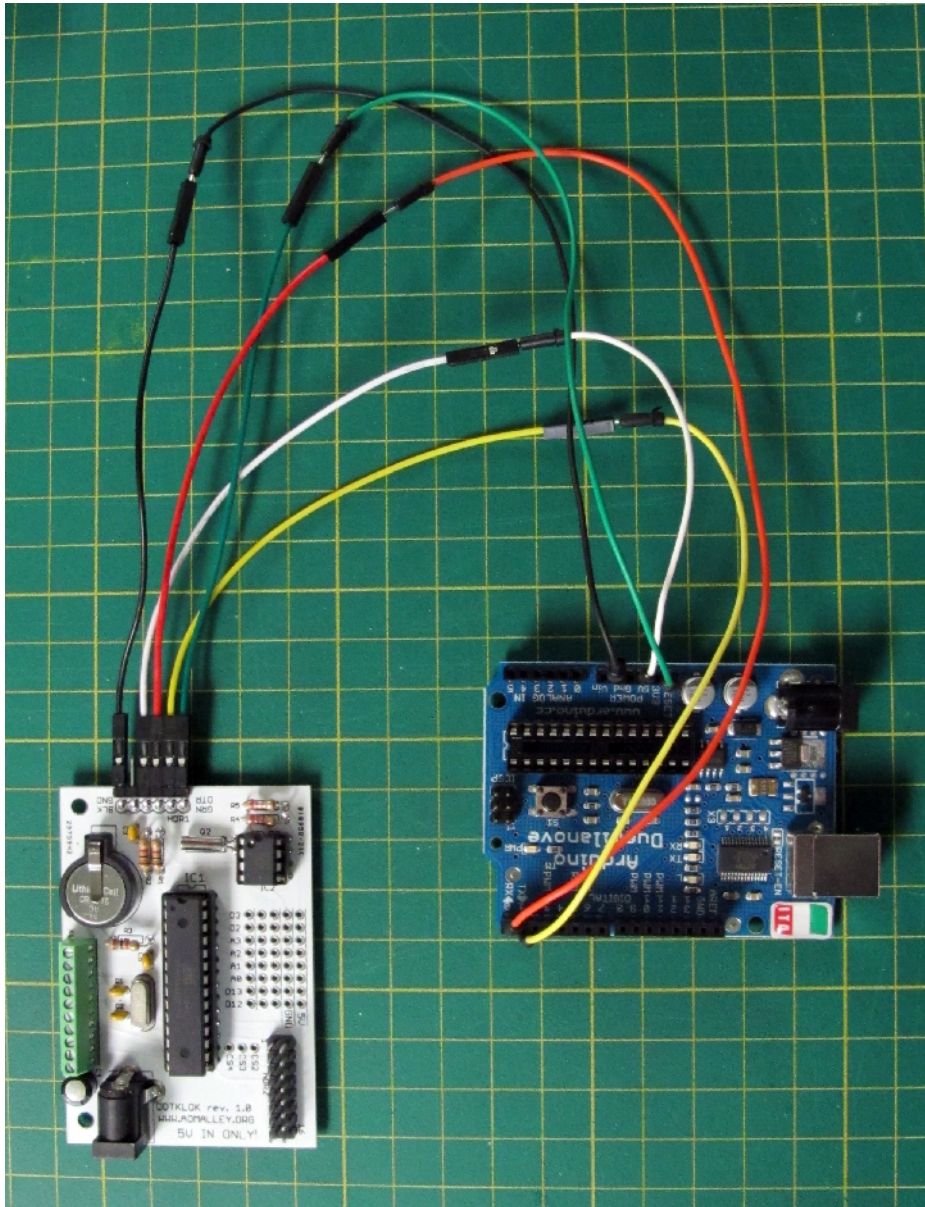


The DTR or GREEN side of the connector should be closest to the right side of the PCB – closest to the RTC chip (IC2) – and the GND or BLACK side of the connector should be closest to the left side of the PCB – closest to the CR1220 coin cell.

By opening the serial monitor in the Arduino IDE (at speed 57600), the DOTKLOK will be reset, and will tell you the version number of the code it is running.

You can also reprogram your DOTKLOK if you have a Duemilanove Arduino board.

After unplugging power to your DOTKLOK and removing the ATmega chip from the Arduino board, the board can be connected to the DOTKLOK PCB for reprogramming:



From left to right on the DOTKLOK PCB, the connections between HDR1 and the Arduino are:

1. *BLK/GRD* → *Arduino Gnd*
2. [no label] → not connected to Arduino
3. [no label] → *Arduino 5V*
4. [no label] → *Arduino RX* / digital pin *0*
5. [no label] → *Arduino TX* / digital pin *1*
6. *GRN/DTR* → *Arduino RESET*

[NOTE: although the above photo shows the PCB removed from the case, this is for clarity only, the PCB does not need to be removed for reprogramming.]

Whether using the FTDI cable, the 5V USB-to-serial adapter, or the Arduino connection, select *Arduino Duemilanova or Nano w/ ATmega328* from the *Tools → Board* menu of the Arduino IDE for uploading new code to your DOTKLOK.

Consult the “readme.txt” file for each release of the code for specific instructions/notes for installing that version.

See www.arduino.cc for instructions on downloading and using the Arduino IDE.

Acknowledgments

A big thanks to the folks at NYCResistor where DOTKLOK was prototyped during the summer of 2010; thanks also to www.Adafruit.com and www.Sparkfun.com for their awesome tutorials on circuit and PCB design, and their encouraging open-source spirit; and of course thanks to Deb for all her help and support along the way, especially with these assembly instructions and documentation!

Useful links

The following resources were very valuable to the development of DOTKLOK:

[links here](#)

Inspiration and other cool clocks

Pong / table tennis clocks:

http://www.sandermulder.com/pong_clock.html

<http://www.ladyada.net/make/monochron/>

Word clocks:

<http://www.qlocktwo.com/info.php?lang=en>

<http://www.instructables.com/id/A-Word-Clock/>

<http://www.artlebedev.com/everything/verbarius/>

Domino clock:

<http://news.carbondesign.com/carbon-blog/repurposing-an-icon-introducing-carbons-domino-clock/>

Other cool clocks

<http://www.bramknaapen.com/?p=549>

<http://www.anthonydickens.com/timeline.htm>

Licensing

All the DOTKLOK source files are released under the Creative Commons Attribution-ShareAlike (CC-BY-SA 3.0) License:

<http://creativecommons.org/licenses/by-sa/3.0/>

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