



a Micro BITX (uBITX) radio as all the software written for this board requires I2C display connections, NOT parallel as on the original Raduino.

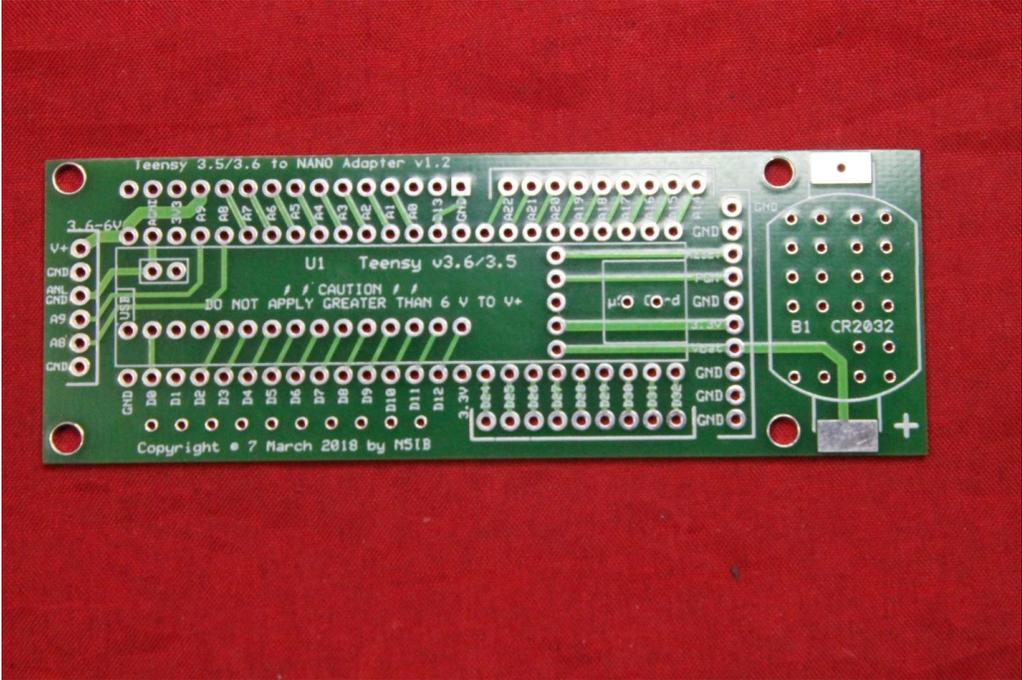
There are, also SIZE constraints. With a Teensy adapter and Teensy plugged into a RadI2Cino card, everything will be over an inch thick and will stick out past the front of the uBITX main board by at least that much, maybe a little more. This combination WILL NOT fit a standard case from India as there simply is not enough room between the front of the Teensy mounted on the board and the back of the I2C display mounted on the front panel. You must leave at least a half inch, maybe even a little more between the back of the display and the teensy to keep from possibly shorting the Teensy's contacts to the display and vice versa as this could produce disastrous results.

There are power constraints to be considered too. The Teensy 3.5 has 5 volt tolerant digital I/O pins where the Teensy 3.6 inputs are all 3.3 Volt max and are NOT 5 volt tolerant. On both the 3.5 and 3.6 all of the analog I/O is 3.3 volt only. Board main power is a nominal 5 volts at around .3 amps or more depending on how it is being used so an external fairly high current 5 volt supply is absolutely necessary, preferably a 1.5 amp 7805 equivalent regulator should be used.

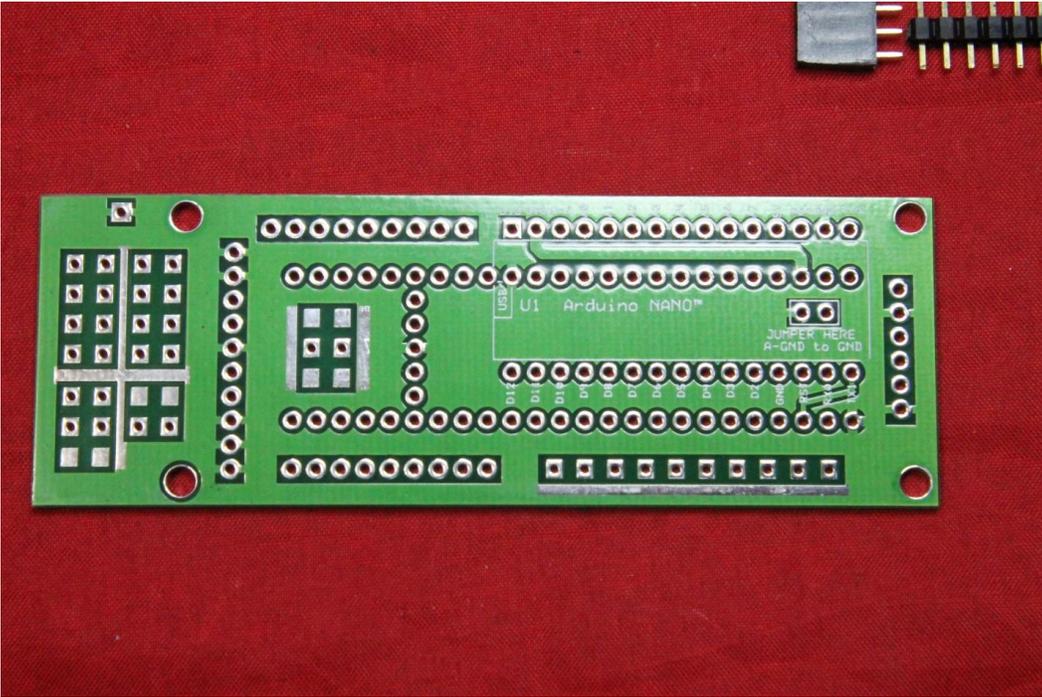
When this card is mounted on our "RadI2Cino" board, all the selectable jumpers on the RadI2Cino need to be relocated to the back of the card as they will interfere with Teensy adapter mounting.

This document is intended to be a quick & simple instruction manual on how to assemble the board and connect it in place of an Arduino Nano. There is NO schematic available and we offer no warranty whatsoever.

The builder is strictly on his/her own as to proper construction techniques and actual use.



Bare board shown from the "Teensy" mounting side (Top)

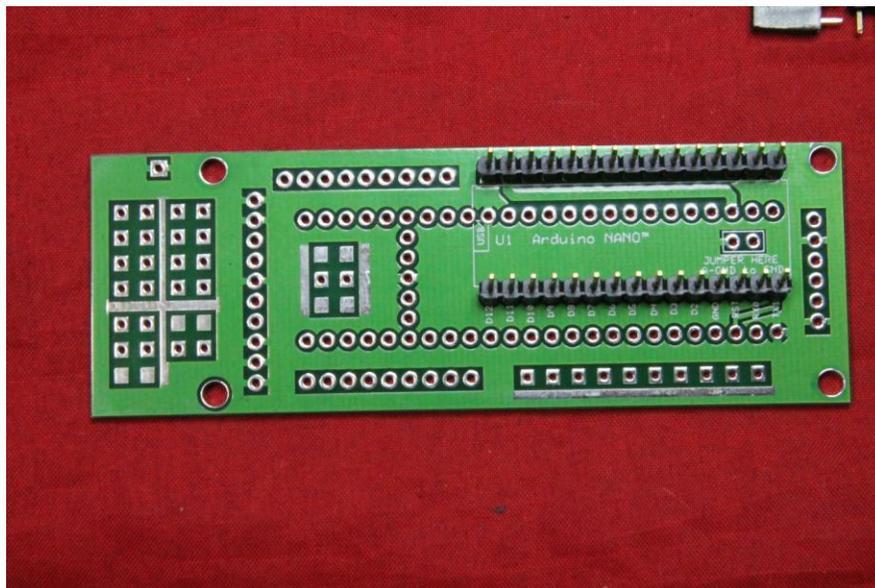


Bare board shown from the Nano pin header mounting side (Bottom).

Suggested method of construction:

First, mount two 15 pin male DuPont headers that will plug into the Nano socket, inserting the shorter pins through the holes on the bottom of the board along the edges of the silkscreened Nano outline. The long ends should protrude from the side with the Nano's outline silkscreened on it (bottom of the board). Carefully turn the board over and solder one pin on each 15 pin header. Next carefully heat that pin while pressing on the long ends of the header to make sure they are vertical and the plastic spacer is flat to the board. Do this for both 15 pin headers. Once you are satisfied the pins are properly aligned and vertical, solder all 30 pins carefully (on the top side of the board and insure there are no solder shorts between pins.

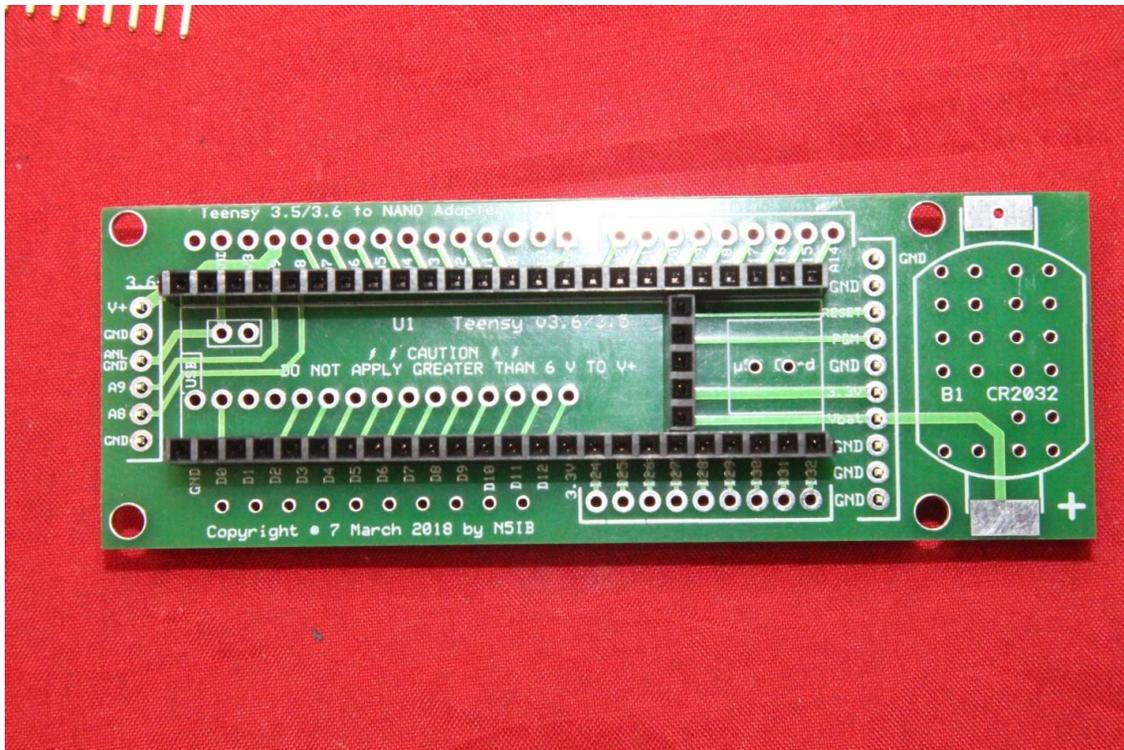
The long ends of the headers should stick out the bottom of the board and these will plug into your project in place of the Nano.



With the 15 pin headers in place the bottom of the board should look like this.

Now turn the board over and insert two long, 24 pin, female header sockets into the holes on the top side of the board aligned with the Teensy's silkscreened outline. If you have your Teensy already, it would help align these sockets if you plugged the Teensy into them and then make sure the holes are lined up properly. Once this is done, solder all 48 pins on the bottom side of the board, again be careful that all pins are soldered and there are no solder shorts between pins. If you want the analog ground and digital ground to be at the same reference, using a piece of small diameter wire, solder a jumper between the holes marked Jumper Here A-GND to GND otherwise leave it open.

Flip the board back over and insert a 5 pin female cross socket into its holes in the board. Plug the Teensy back in (you do have those 5 pins added to your Teensy don't you?) to hold this cross socket in place and solder the 5 pins on the underside of the adapter board. These connections are absolutely necessary for the Teensy's Real Time Clock to receive 3 volts from the CR2032 coin cell to allow it to keep time while the main power is removed from the board.

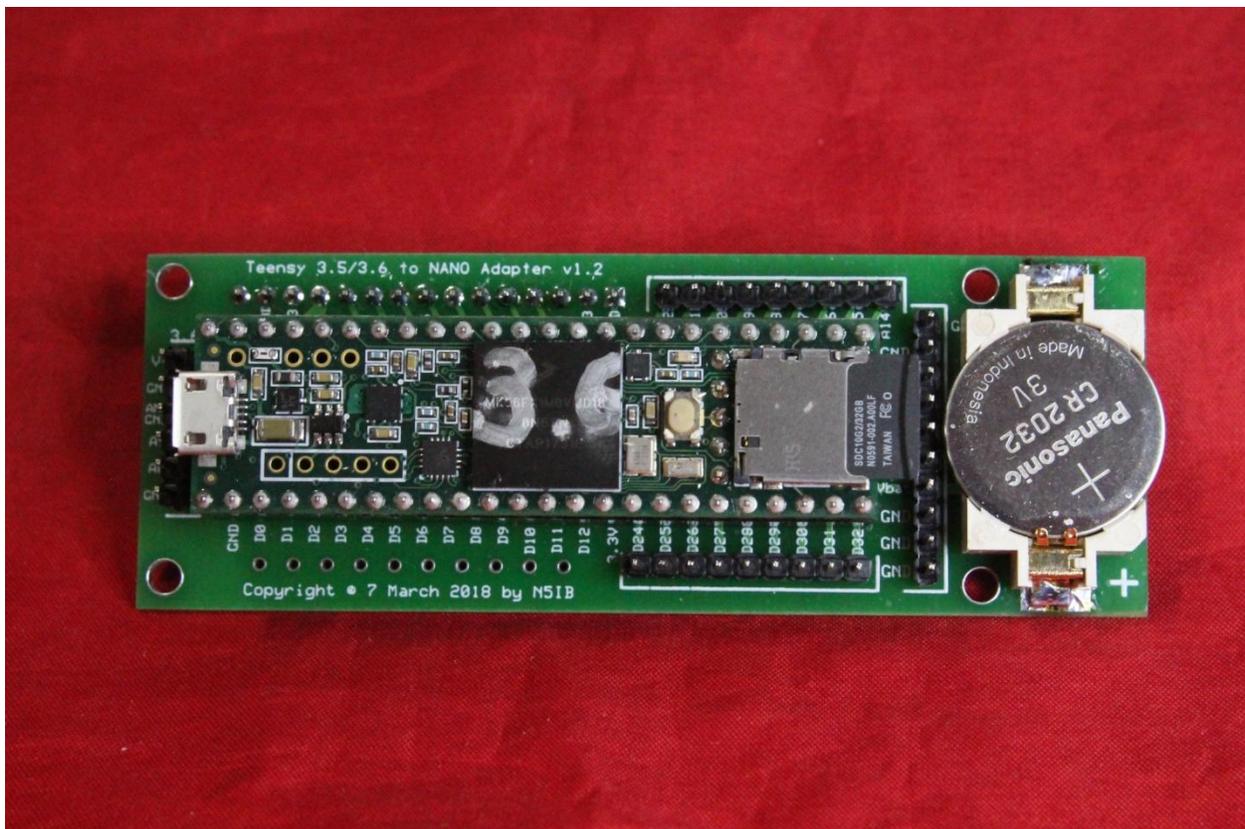


This is what it should look like with the two 24 pin female headers and the 5 pin cross header installed.

There are 3 optional headers to allow for connections to the extra digital and analog I/O pins on the Teensy that don't connect to the Nano socket in case they are needed. There is one 10 pin, two 9 pin and one 6 pin male headers that can be installed. The 10 pin would install so the long pins are out of the top side of the board and just to the right of the Teensy socket as shown in the previous photo, outlined by a silkscreened bar. The two 9 pin headers go to the top and bottom of the right end of the Teensy socket and are also outlined by silkscreened bars. The 6 pin header goes right at the left end of the board. All the long pins should stick out on the top side of the board and be soldered on the bottom.]

Finally solder a CR2032 coin cell holder in place if you plan on using the internal "Real Time Clock" in the Teensy 3.5 or 3.6 as this battery keeps

the clock running when main power is removed. The positive + terminal goes toward the bottom of the board in the previous picture and you can tell which end is the positive terminal by the 2 short vertical “Hooks” that slip over the top of the coin cell. The two longer fingers contact the minus (underside) of the coin cell. If in doubt, insert a CR2032 coin cell in the holder (with the + side UP, carefully slide the edge under the two small hooks and press the cell in place. It will snap in and be held by the plastic fingers. Take your voltmeter and measure to make sure which is the positive terminal and (take the cell out first) solder that end to the pad marked + on the board. Solder the minus terminal and that completes the board.



You can see the two short gold hooks holding the top of the coin cell right near the + marking on it. You can also see the optional headers in place.

When plugging the adapter board in place of a socketed Nano, make sure the small USB connector on the Teensy is on the opposite end from where the one on the Nano was.

Please remember, the software for this board requires that an I2C type display (not parallel) be connected to the uBITX card so using a standard Raduino is NOT recommended. The Raduino can be converted for I2C but there are some serious constraints to the displays that can be plugged in. The SDA and SCL lines of the display MUST repeat MUST put no more than 3.3 volts on their lines or the Si5351a Clock chip on the Raduino WILL not survive. BE VERY CAREFUL if you modify the Raduino!

W0EB