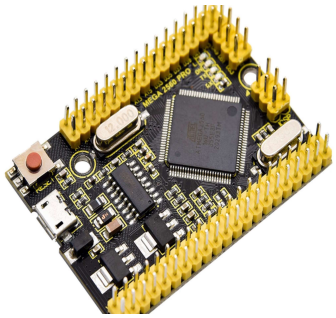


MEGA2560 PRO MINI
Speeduino Serial 0 HC-06 Bluetooth Mod

Note: no guarantee this works with all Pro Mini / HC-06, but works with all I have tried.

The use of blue-tooth connection to Tuner Studio as described in the Speeduino Wiki works on a full sized MEGA2560 board but not on the Pro Mini version. This is due to the value of the resistors used to connect the USB-Serial chip to the TX0/RX0 pins on the MCU chip and header pins.

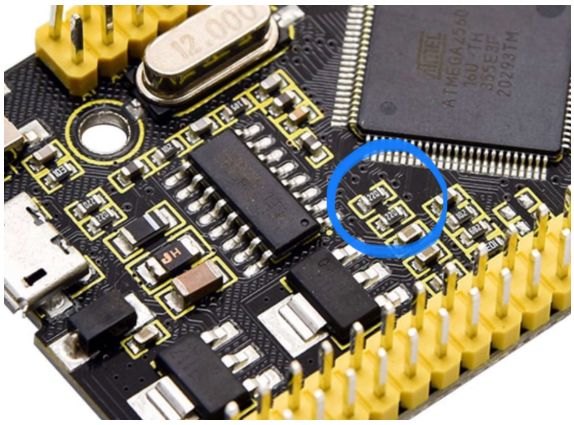
The full sized Mega2560 that use the 16U2 for USB-Serial conversion have 1K resistors, thus when you attach the blue-tooth module, as in the Speeduino Wiki, it connects to the header pins and thus directly to the MCU pins. The 16U2 chip is still attached to the MEGA TX0/RX0 pins through 1K resistors, the load produced by this can be overcome by the blue-tooth module so it all works.

However the PRO MINI uses a CH340G usb-serial chip connected to the MCU and TX0/RX0 pins through 22R resistors, this low resistance loads the blue-toothTX / Mega RX signal too much stopping the blue-tooth working.

The picture below shows the resistors, one goes to the ProMini TX0 pin and one to the RX0 pin.

The fix I have found to work is to change the 22R (marked as 220 in SMD marking format) that is attached to the ProMini RX0 pin to 220R (either 221 or 2200 in SMD marking format). This reduces the loading on the bluetooth module enough to make it work. You should use a multi-meter to identify which of the two resistors to change as I have found some ProMinis with small layout differences that swap the PCB position of the TX and RX resistors.

(Swapping both resistors does seem to work but it will degrade the low level logic level of the Mega2560 TX0 signal due to the voltage divider produced with the TX LED dropping resistor.)



If you never wish to use Bluetooth you should leave the resistors as 22R as it gives better logic voltage levels between the CH340 and Atmega2560.