

# AutoISP Manual

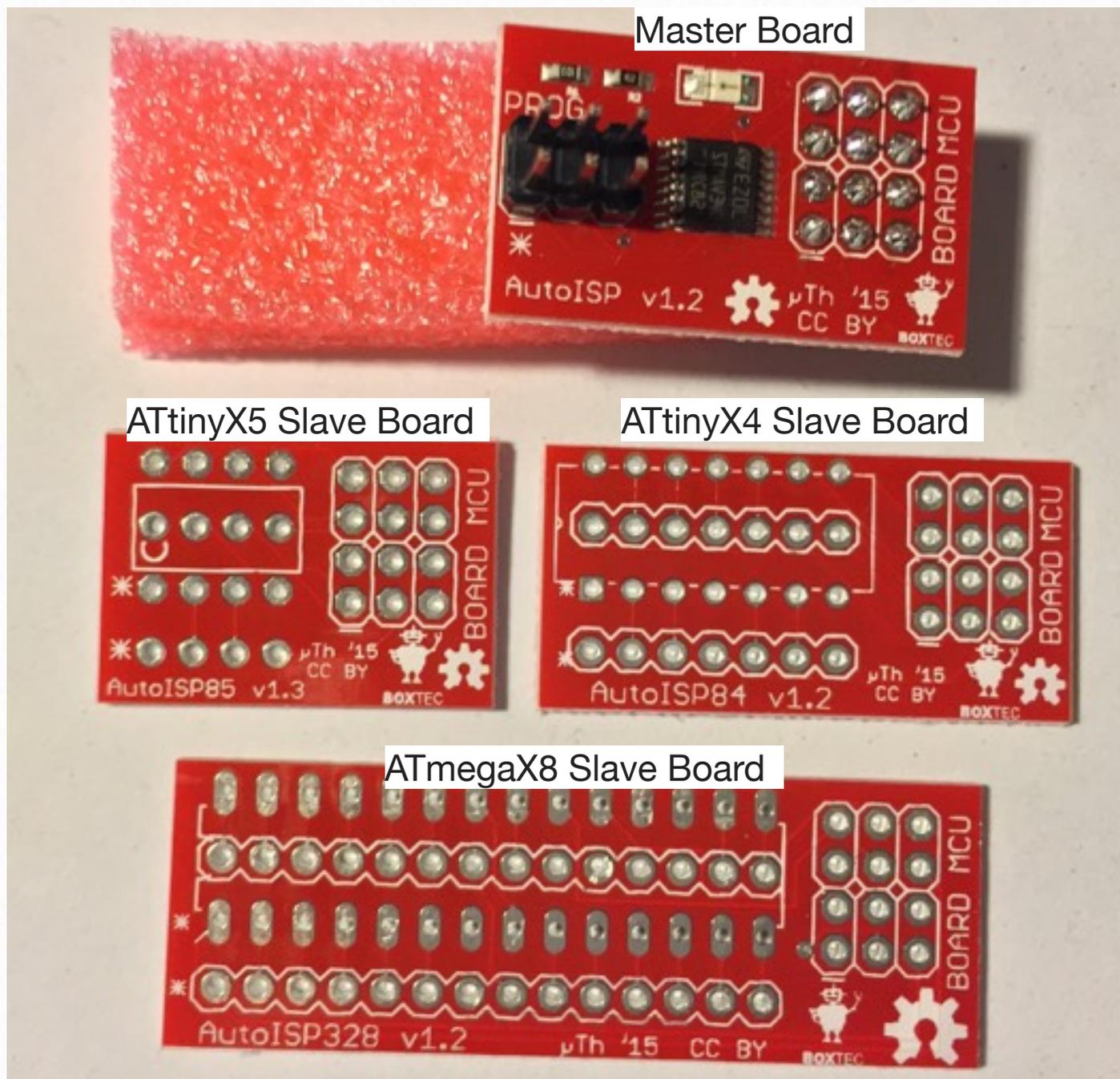
Version 1.2 for AutoISP v1.2

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# Welcome to AutoISP



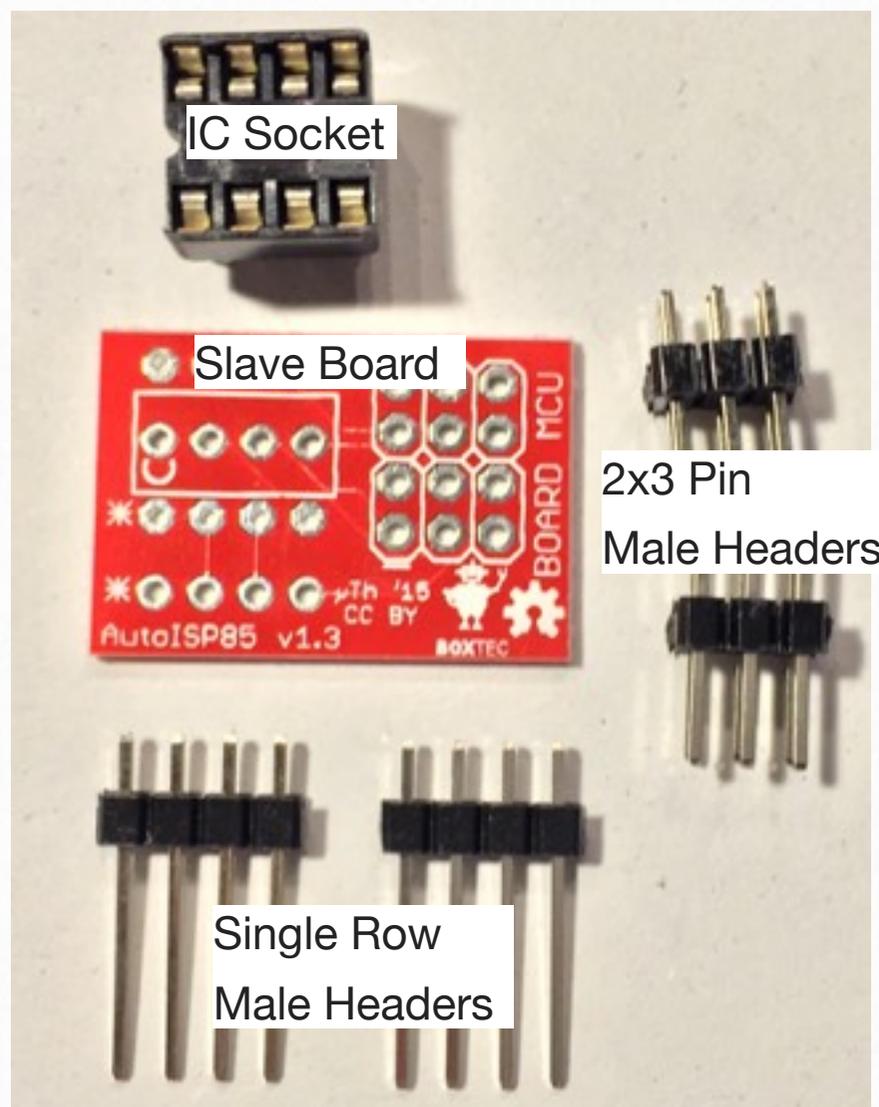
AutoISP is a development system to facilitate programming microcontrollers through the SPI serial protocol. It consists of a universal master board containing the logic, plugged into one of a family of slave boards containing the wiring for a particular microcontroller

While developing with AutoISP, the microcontroller is plugged into the socket on the slave board, while the slave board in turn is plugged into the circuit. The ICSP header on the master board is connected to a programmer. While the RESET pin on the ICSP header is held high (or unconnected), AutoISP works as if the microcontroller were plugged directly into the circuit. As soon as the RESET pin is pulled low, though, the RESET, MOSI, MISO, and SCK pins on the microcontroller are no longer connected to the circuit, but to the corresponding pins on the ICSP header. This allows reprogramming the microcontroller without physically removing it from the circuit or having to reconnect it afterwards.

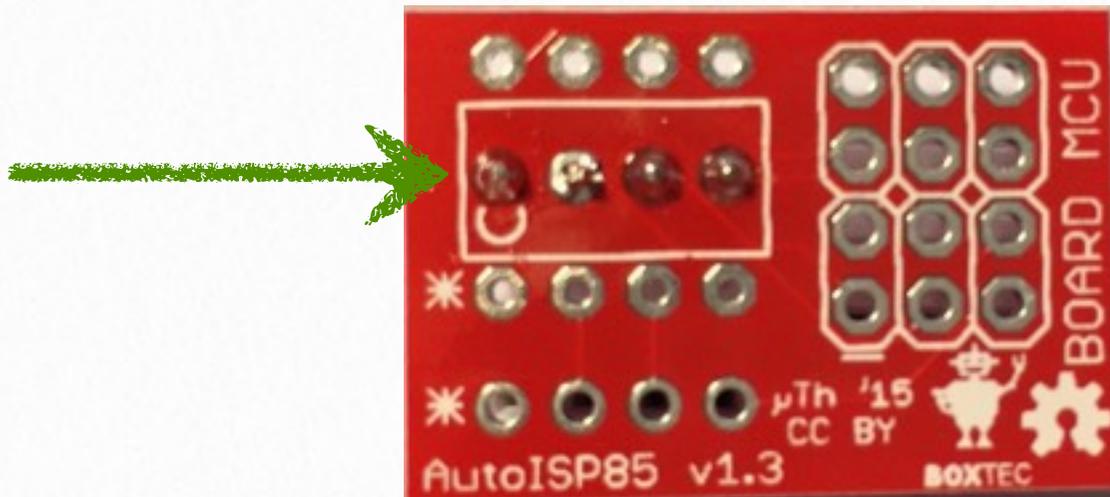
# 1

## Assembling Slave Boards

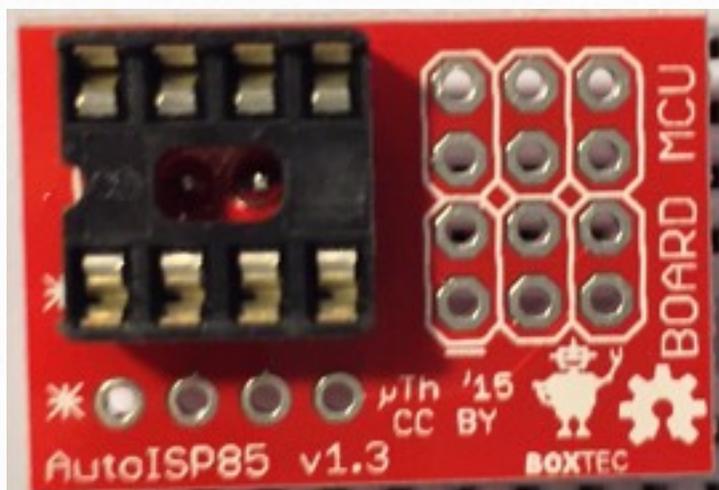
While the AutoISP Master Board you received has come pre-assembled, the slave boards need to be assembled first. This is a straightforward through hole soldering task, but it's important to perform the steps in the right order (and have the pins poke out on the right side of the board).



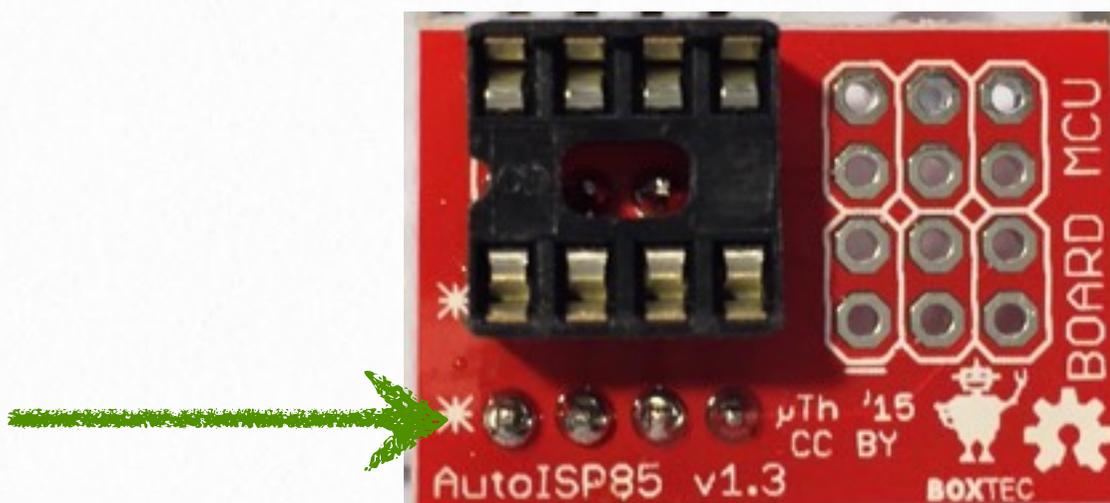
1. Insert one of the single row male header strips from the **bottom** of the board into the row of holes in the **middle** of the IC socket outline of the slave board, and solder it on top. The pins should extend only minimally (1-2mm) from the surface of the board. Make sure that all contacts are properly soldered, as the solder points will no longer be accessible after the next step (which is also why it's **crucial to perform this step first**).



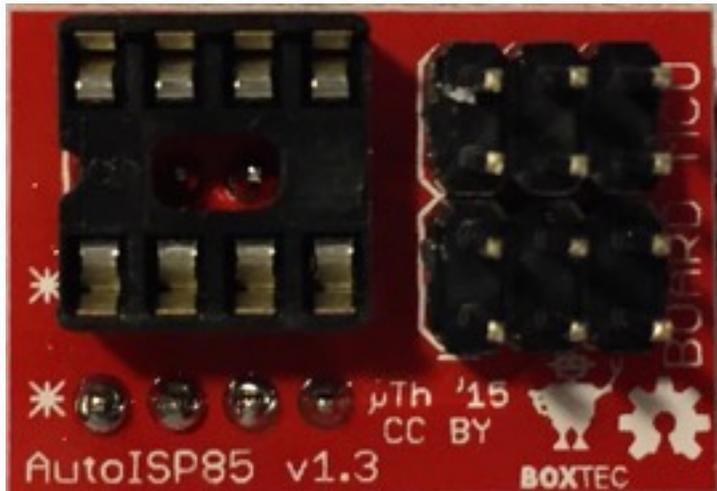
2. Insert the IC socket from the **top** of the board and solder it on the bottom (aren't you glad now you already soldered the middle row of pins?).



3. Insert the other single row male header strips from the **bottom** of the board into bottom row of holes, and solder it on top.



4. Insert the two 2x3 pin male headers from the **top** of the board and solder on the bottom.

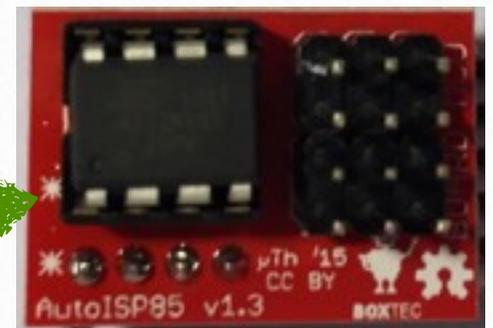


# 2

## Operating Instructions

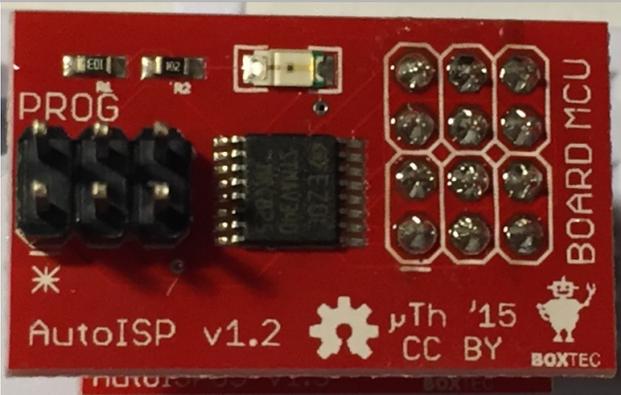
1. Design your circuit, either on a breadboard or with a socket for your chosen microcontroller.

2. Insert your microcontroller into the socket on the appropriate AutoISP slave board. Pin 1 of the microcontroller should align with the bottom left corner of the slave board (the pin closest to the “A” of the “AutoISP” label).

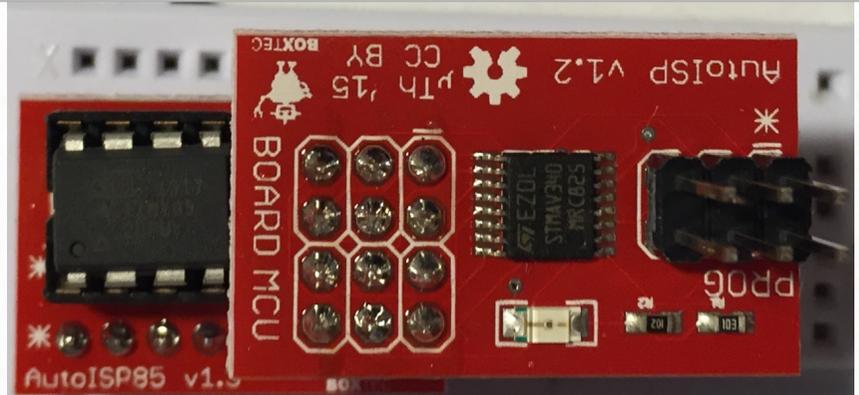


3. Plug AutoISP master board into the slave board, such that the two boards are in parallel and the labels “AutoISP”, “MCU” and “BOARD” appear in the same orientation on both boards.

**Correct! Labels Aligned.**

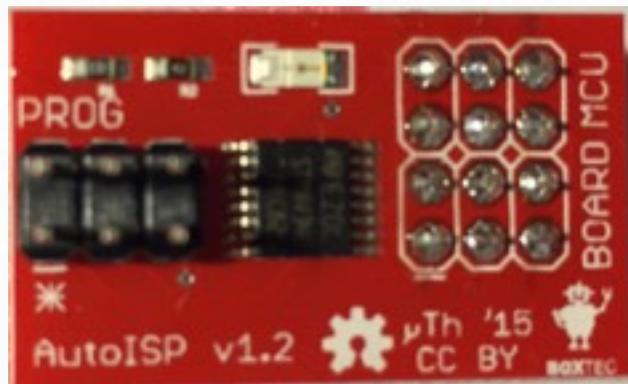
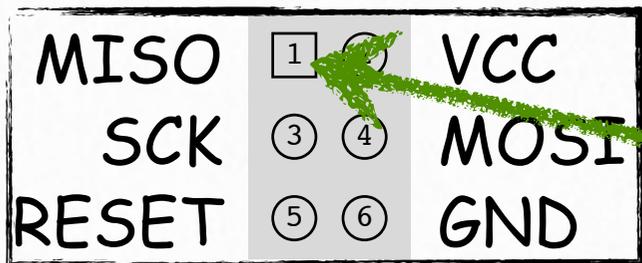


**Incorrect! Labels Misaligned.**



4. Plug the slave board into the breadboard or socket. Pin 1 of the socket should align with the bottom left corner of the slave board (so the microcontroller is in the same orientation as it would have been when inserted directly into your circuit, just slightly offset vertically).

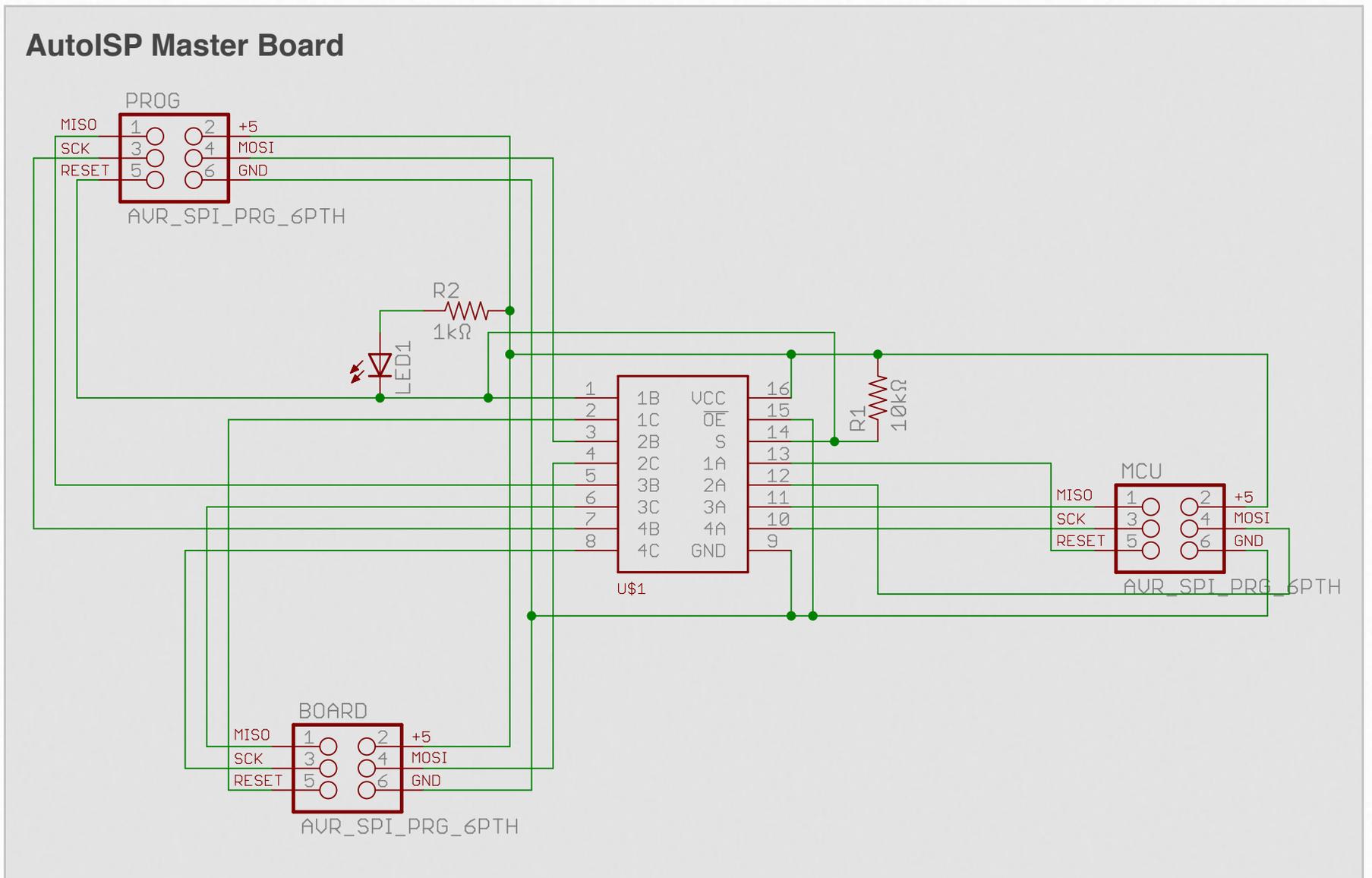
5. Connect the top ICSP header of the master board to either a dedicated programmer or to an Arduino loaded with the ArduinoISP or the ScratchMonkey (<http://microtherion.github.io/ScratchMonkey/index.html>) sketch. Pin 1 is at the bottom left of the board (next to the “A” of “AutoISP”).



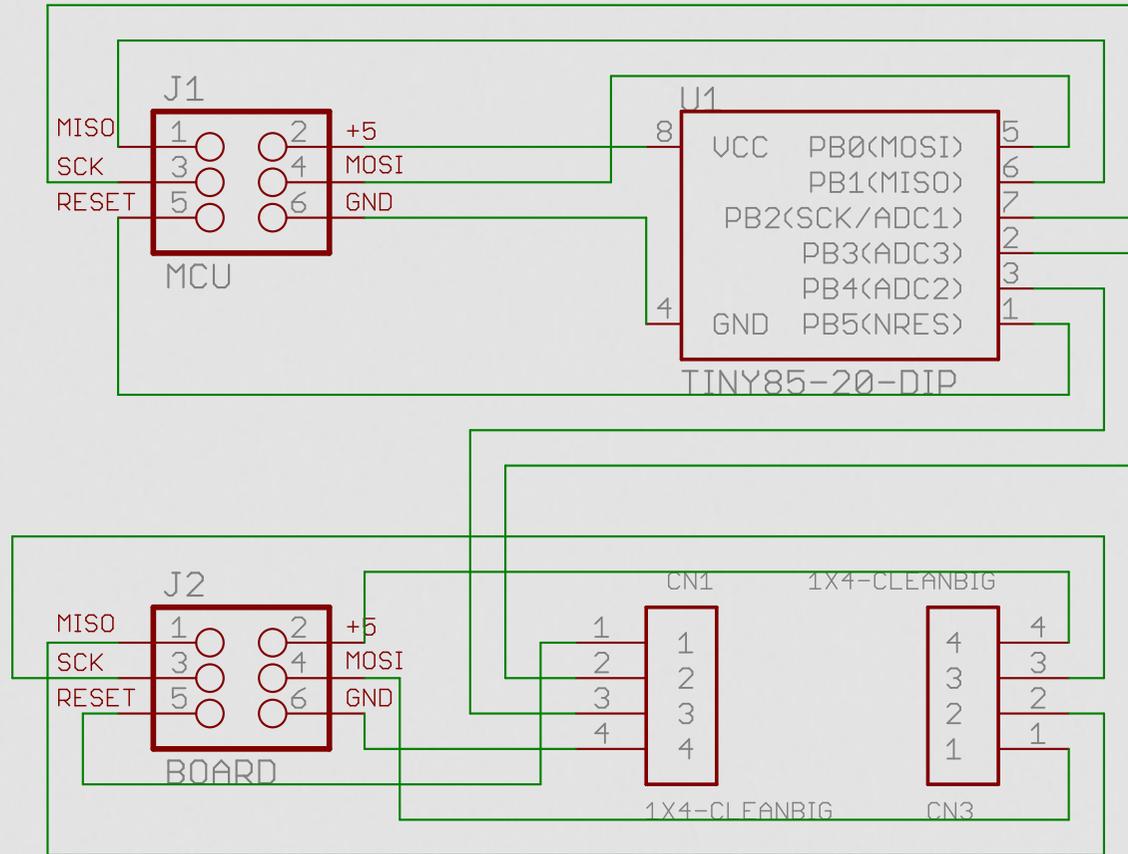
6. Program your microcontroller as if it were not connected to the circuit at all. You will notice that the LED on the AutoISP board lights up while RESET is held low (i.e. programming is in progress).

# 3

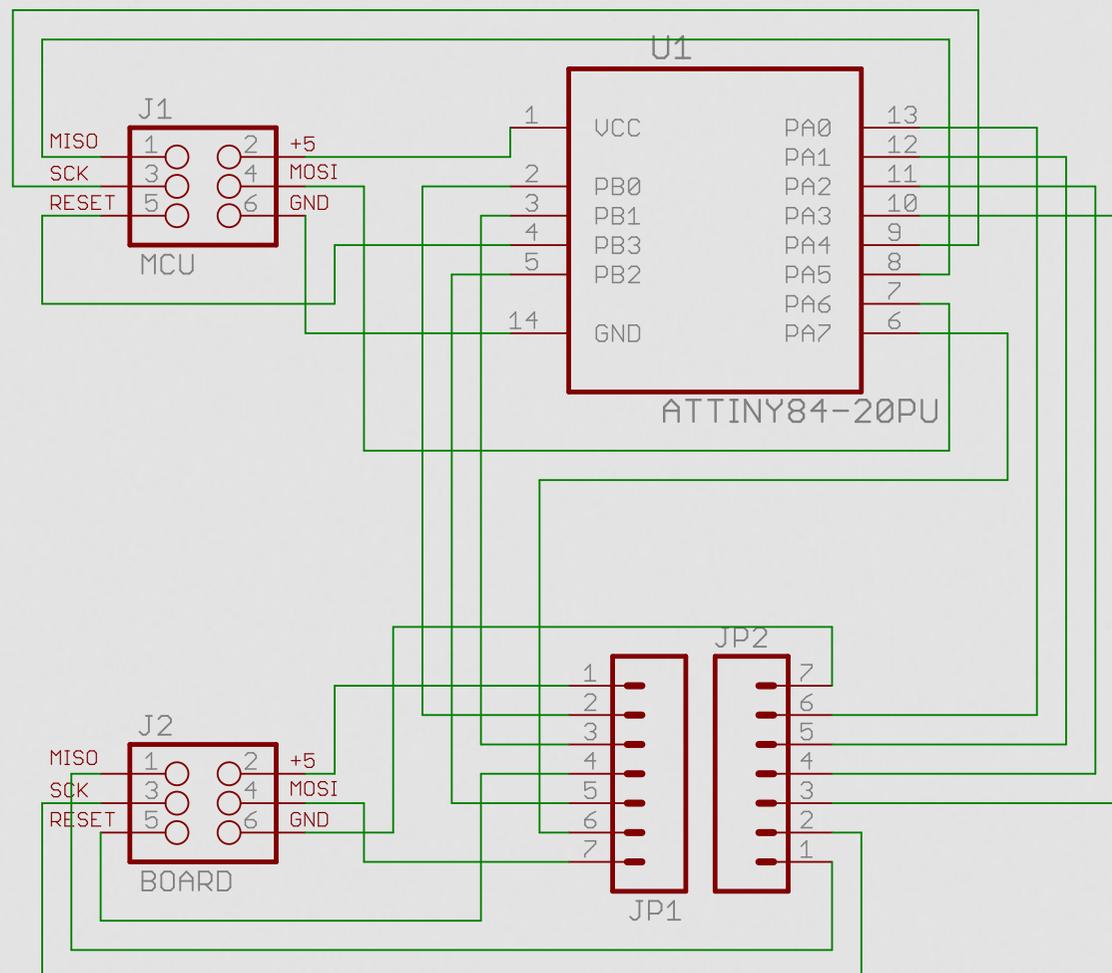
## Board Schematics



## AutoISP85 Slave Board



## AutoISP84 Slave Board



# AutoISP328 Slave Board

