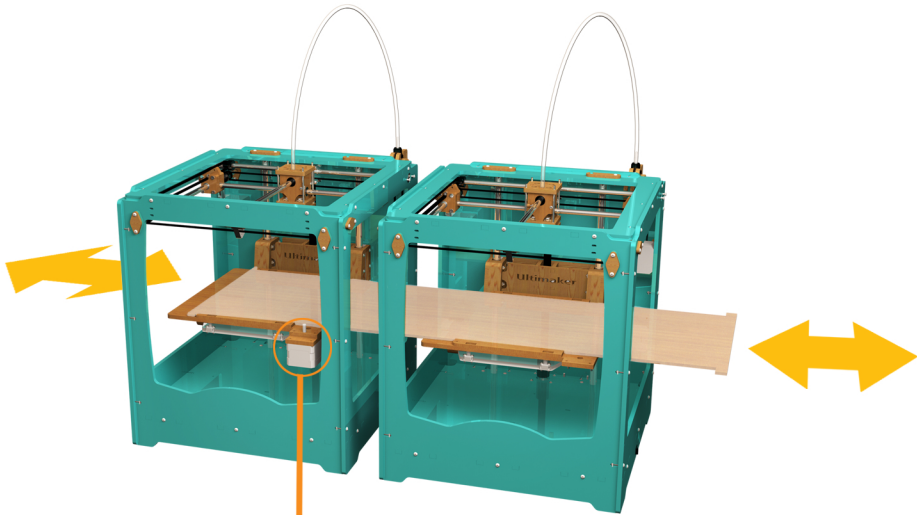


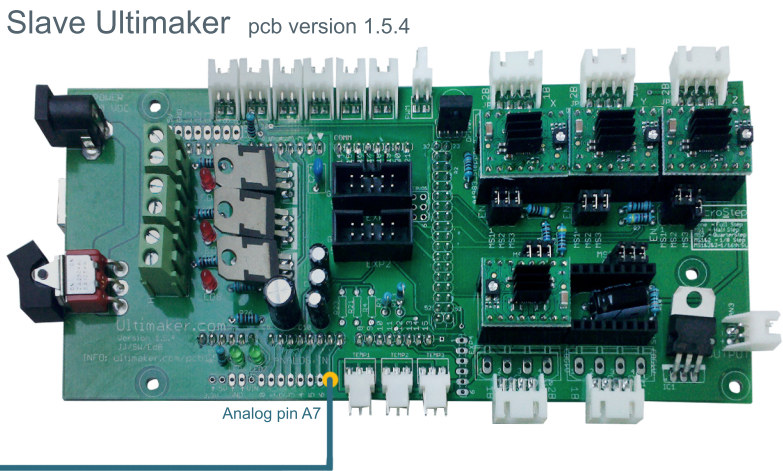
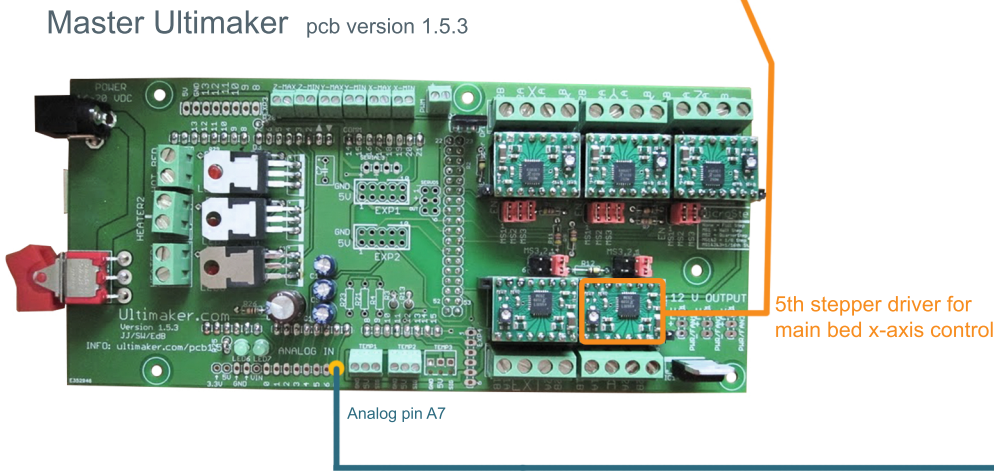
Preliminary plan to connect two Arduino based Ultimakers for faster automated printing on a single large bed.

11-10-13

Hardware Setup



Two Ultimakers side by side will each print 1/4 of the model simultaneously, after each layer the bed is moved so the other two quarters can be reached and printed.



Arduino to Arduino communication wire

PCB images: <http://www.reprap.org/wiki/Ultimaker>

Coding System

Master Ultimaker

End of G-code layer block

M43 P61 S255

To be written custom g-code command that compares pin value to specified level. If false, rechecks until true. This will make sure the Master waits until the Slave has finished printing its layer.

T0 E(value)

When both printers have finished, this command sequence will tell the 5th stepper motor to move the printing bed a specified amount.

M42 P61 S0

Set pin (A7/D61) to specified value 0, in order to tell slave printer to continue with next layer.

Start of G-code layer block

Slave Ultimaker

End of G-code layer block

M42 P61 S255

Existing g-code command to set pin output(A7/D61) to specified value(225).

M43 P61 S0

Same custom command that now holds the Slave printer from doing anything until pin 61 (A7) returns value 0.

Start of G-code layer block

Questions/To be determined

- Is an extra ground wire necessary to secure the connection between the Arduino boards?
 - Only case we are currently aware of using just a single wire connect the digital transmit and receive pins RX and TX. (these pins are unavailable on the ultimaker board). Can this be considered a similar connection?
- Currently available Ultimaker for adaption to Master uses an older v1.5.3 PCB, documentation suggest this uses a different pin definition than newer 1.5.4 and above version, does it and/or will this cause problems?
 - Possibly build a simple LED board to test pin response.
- How to construct the new M43 command to halt further g-code lines until requested value is met, but not risk machine from not responding to other processing commands? Or prevent from creating an infinite loop malfunction when, for example the slave printer is disconnected.