

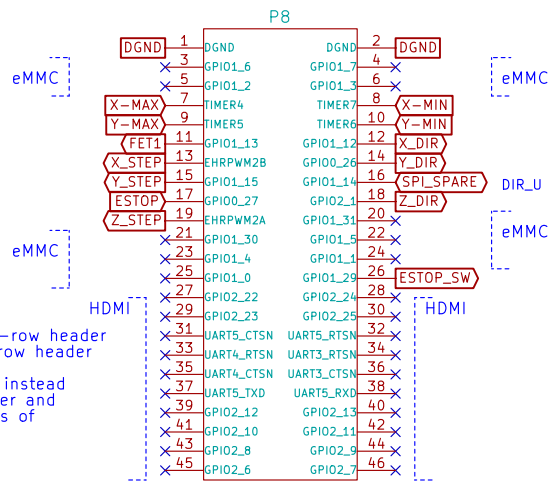
To save money on all the pin headers when buying parts for a few boards you can get large breakaway headers instead of the individual parts. You will need a total of:

- 18 pins of single-row header
- 82 pins of dual-row header

Which you can get using

- Harwin M20-9993645 36-pin single-row header
- Harwin M20-9983645 72-pin dual-row header

If you want to use standard pin headers instead of the latching KK headers for the stepper and ESTOP headers, you need another 32 pins of single-row header



Stepper Drivers



Emergency Stop



Inputs



Mosfet Outputs

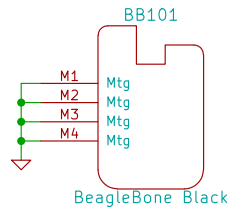


Serial Console



BeagleBone serial console pass-through header

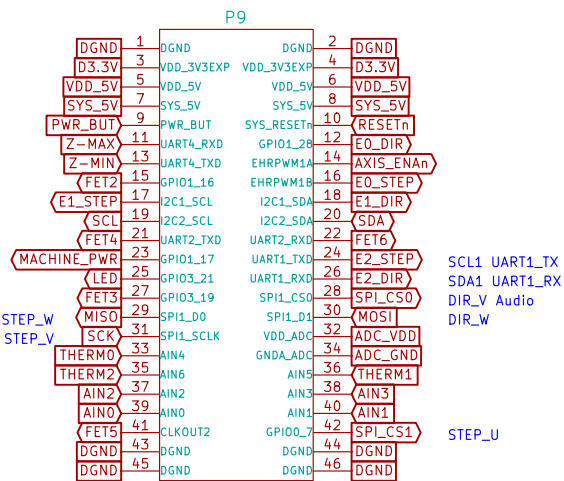
Uses Arduino 6-pin stacking connector for low-cost



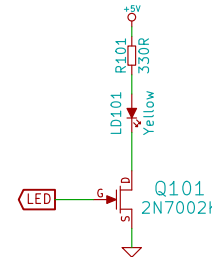
24.576MHz Audio

Audio STEP_W

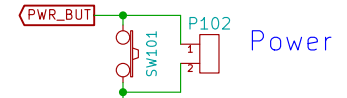
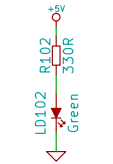
Audio STEP_V



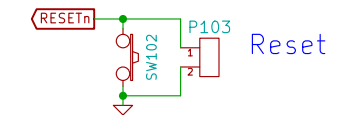
STATUS LED



BB ON LED

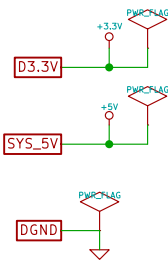


Power



Reset

BeagleBone Logic supply is always 3.3V



D3.3V: Low-current supply from 500 mA LDO on BeagleBone

SYS_5V: Low-current supply provided by BeagleBone PMIC Active when BeagleBone is running



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 Derived from RAMPS-FD by Bob Cousins
 Derived from RAMPS 1.4 reppap.org/wiki/RAMPS1.4

File: CRAMPS.sch

Sheet: /

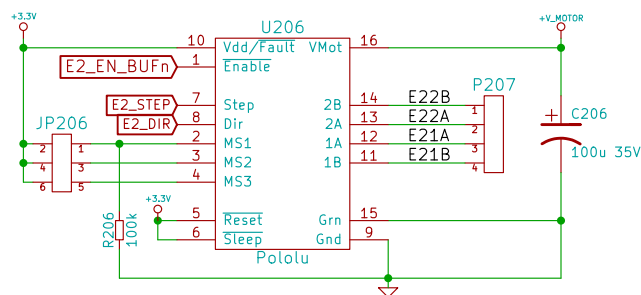
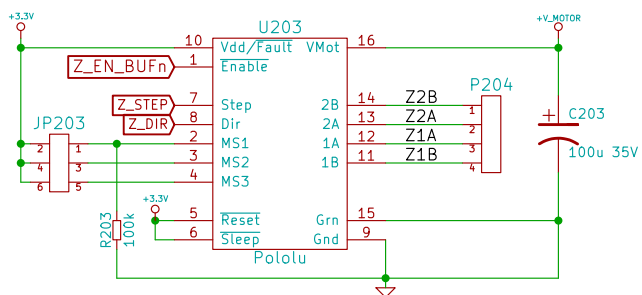
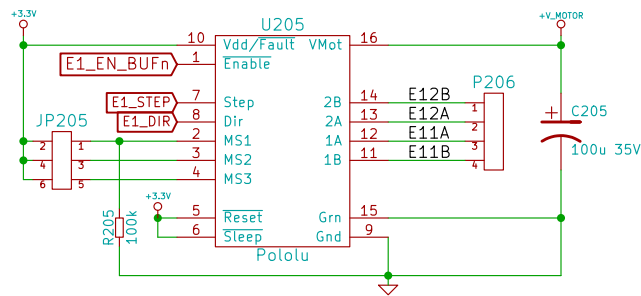
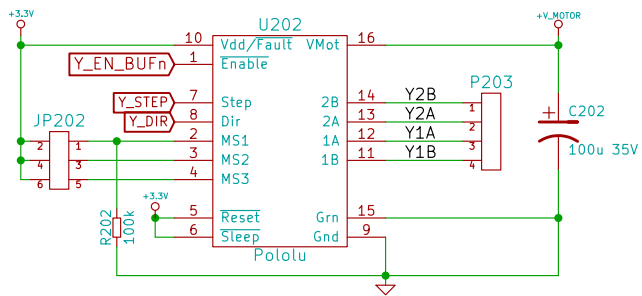
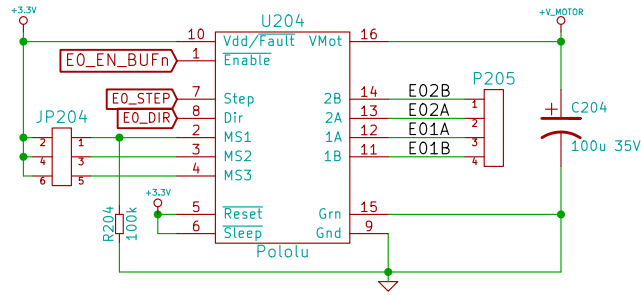
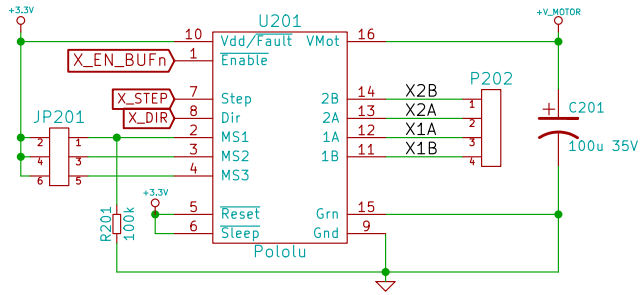
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Size: A Date: 25 may 2014

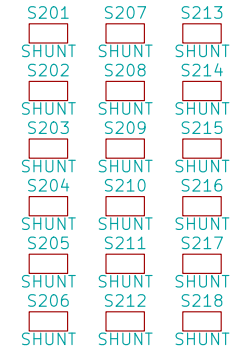
Rev: v2.2

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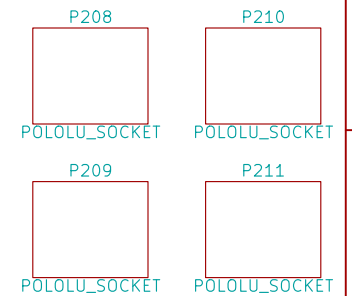
Id: 1/5



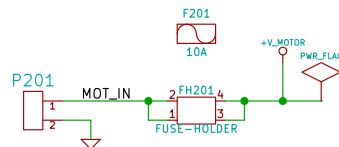
Shunts to set micro-stepping



24-pin Single-Row sockets for Pololu

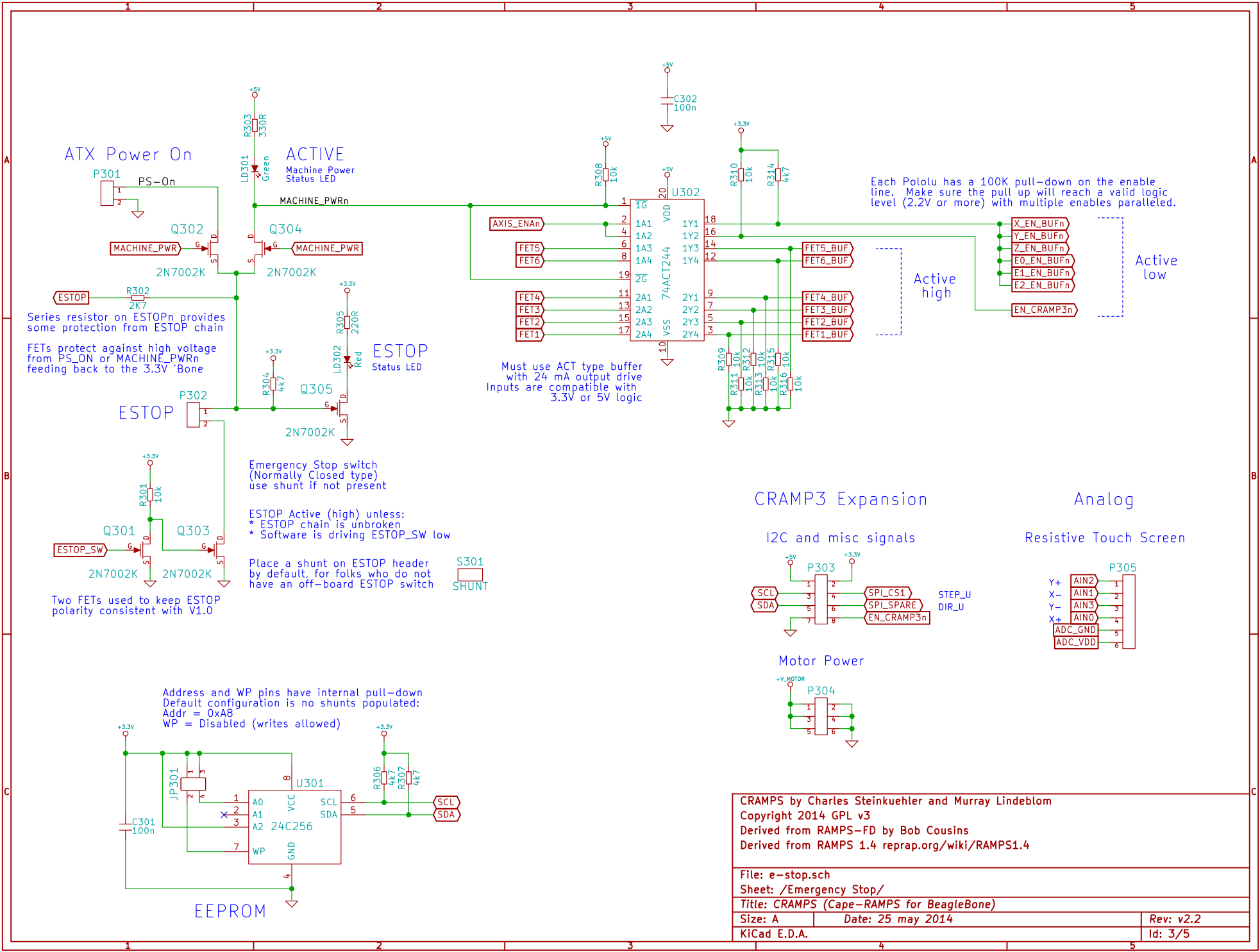


Motor Power
12-24V, 10A



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File: steppers.sch		Rev: v2.2	
Sheet: /Stepper Drivers/		Id: 2/5	
Title: CRAMPS (Cape-RAMPS for BeagleBone)			
Size: A	Date: 25 may 2014		
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Each Pololu has a 100K pull-down on the enable line. Make sure the pull up will reach a valid logic level (2.2V or more) with multiple enables paralleled.

Active high

Active low

Must use ACT type buffer with 24 mA output drive. Inputs are compatible with 3.3V or 5V logic.

Series resistor on ESTOPn provides some protection from ESTOP chain.

FETs protect against high voltage from PS_ON or MACHINE_PWRn feeding back to the 3.3V 'Bone'.

Emergency Stop switch (Normally Closed type) use shunt if not present.

ESTOP Active (high) unless:
 * ESTOP chain is unbroken
 * Software is driving ESTOP_SW low

Place a shunt on ESTOP header by default, for folks who do not have an off-board ESTOP switch.



Two FETs used to keep ESTOP polarity consistent with V1.0.

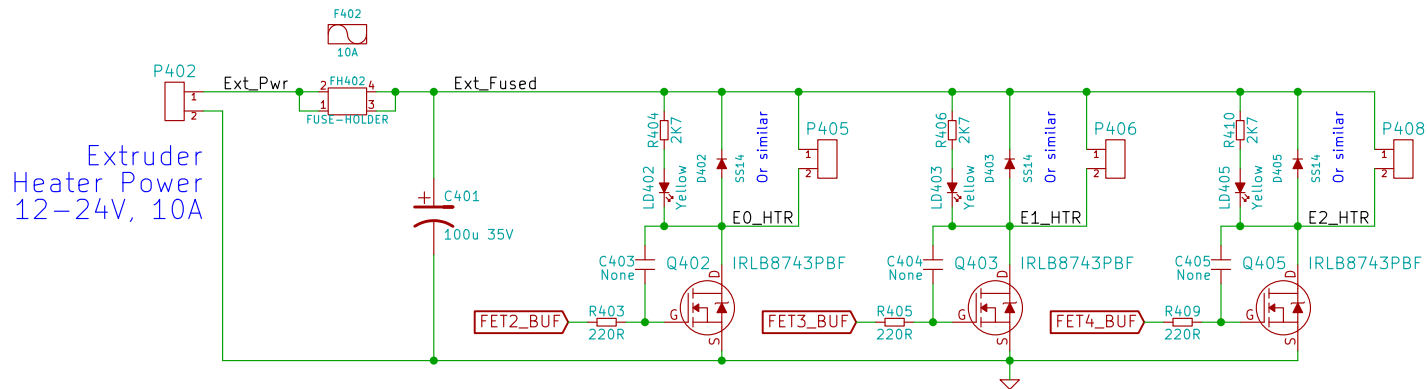
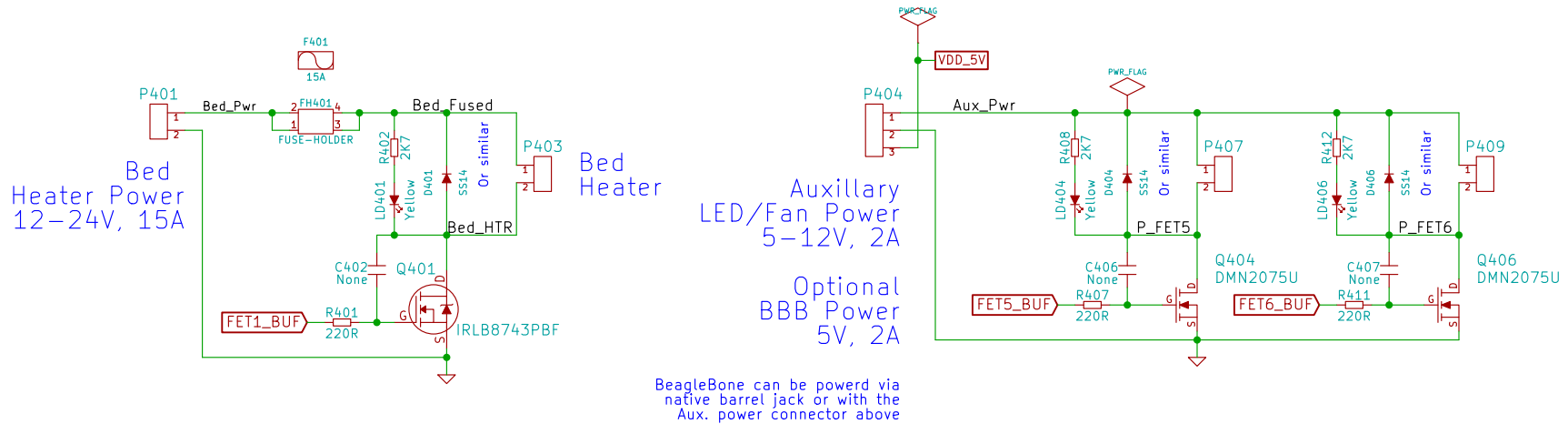
Address and WP pins have internal pull-down. Default configuration is no shunts populated: Addr = 0xA8, WP = Disabled (writes allowed).

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File: e-stop.sch		Rev: v2.2	
Sheet: /Emergency Stop/		Date: 25 may 2014	
Title: CRAMPS (Cape-RAMPS for BeagleBone)			
Size: A	Date: 25 may 2014	Id: 3/5	
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MOSFET Outputs

Non-inverting drivers



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File: con_outputs.sch

Sheet: /Mosfet Outputs/

Title: CRAMPS (Cape-RAMPS for BeagleBone)

Size: A Date: 25 may 2014

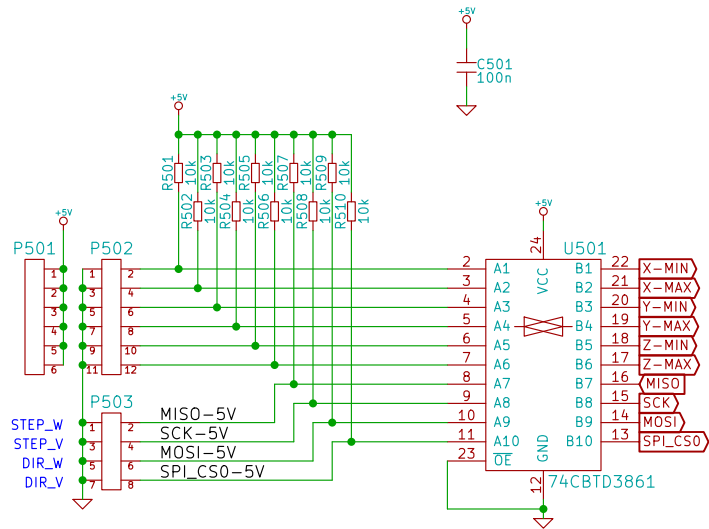
Rev: v2.2

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Id: 4/5

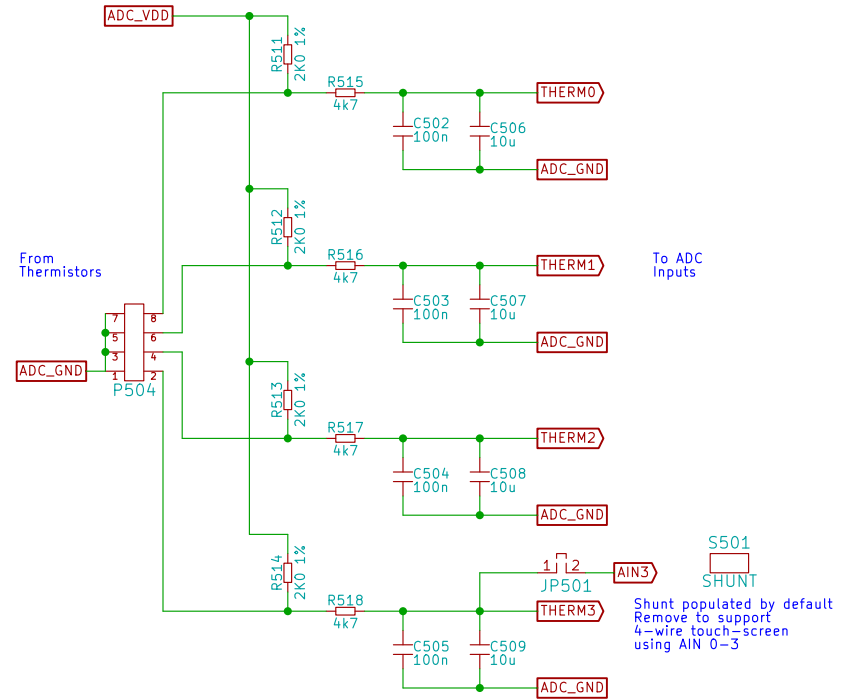
Endstops

Endstop inputs are 5V tolerant and may also be used as 3.3V output signals if desired



P503 may be used for:
 * Additional digital I/O
 * CRAMP3 add-on board
 * SPI expansion

Thermistor Inputs



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File: con_inputs.sch

Sheet: /Inputs/

Title: CRAMPS (Cape-RAMPS for BeagleBone)

Size: A Date: 25 may 2014

Rev: v2.2

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Id: 5/5