

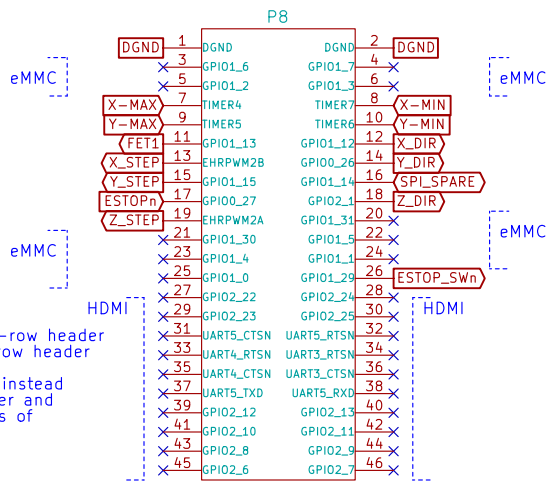
To save money on all the pin headers when buying parts for a few boards you can get large breakaway headers instead of the individual parts. You will need a total of:

- 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

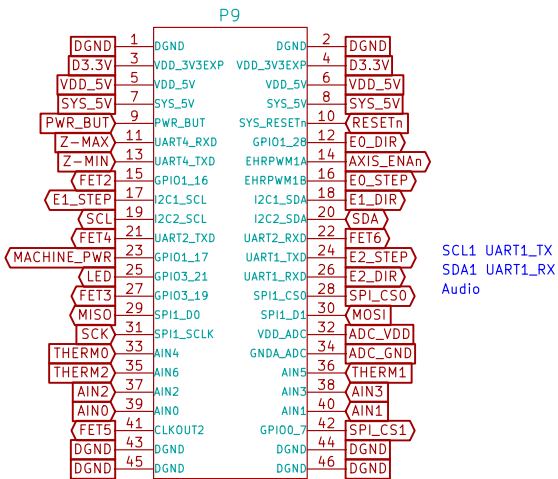


Serial Console



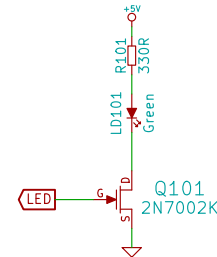
BeagleBone serial console pass-through header

Uses Arduino 6-pin stacking connector for low-cost

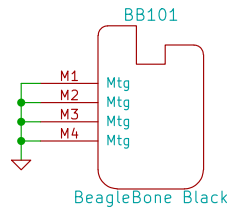
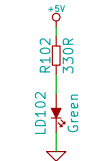


SCL1 UART1_TX SDA1 UART1_RX Audio

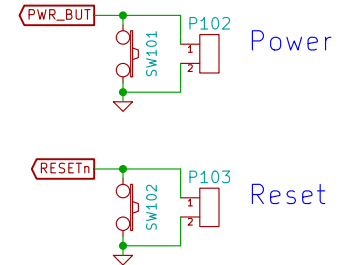
STATUS LED



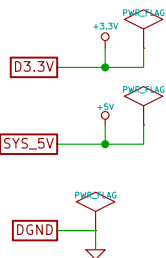
BB ON LED



24.576MHz Audio
Audio
Audio



BeagleBone Logic supply is always 3.3V



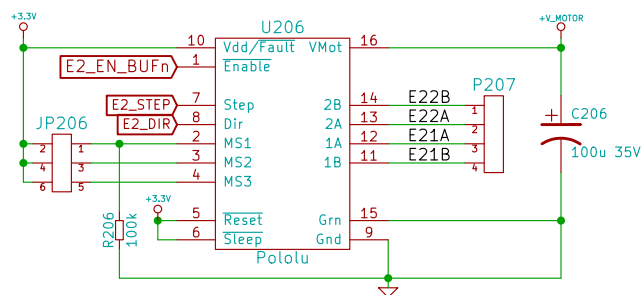
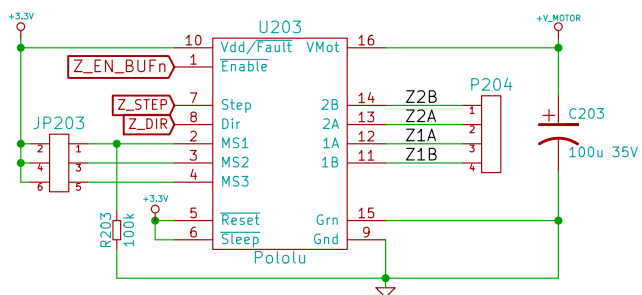
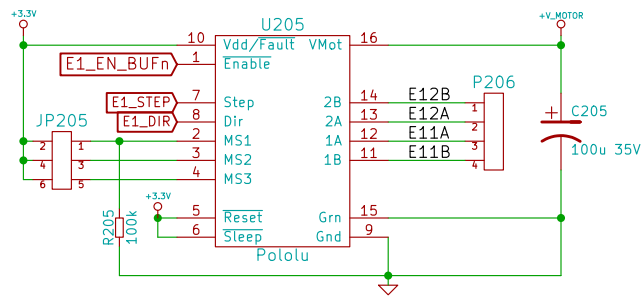
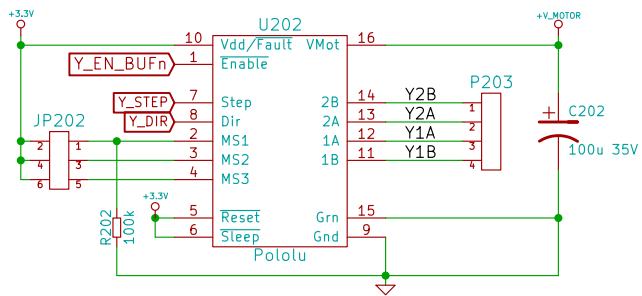
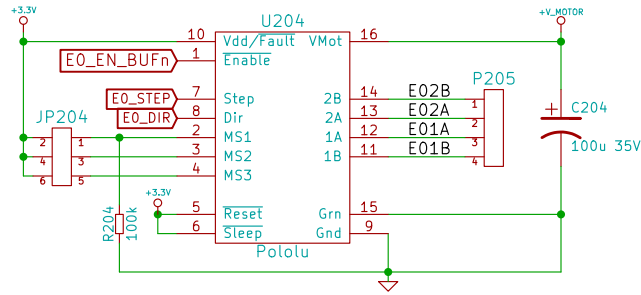
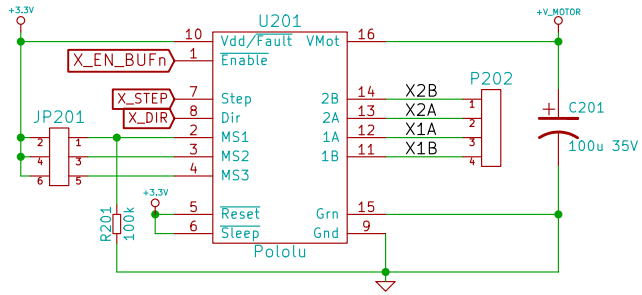
D3.3V: Low-current supply from 500 mA LDO on BeagleBone

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

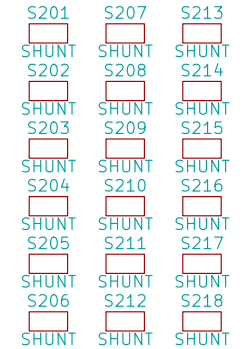


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Derived from RAMPS-FD by Bob Cousins
Derived from RAMPS 1.4 reppap.org/wiki/RAMPS1.4

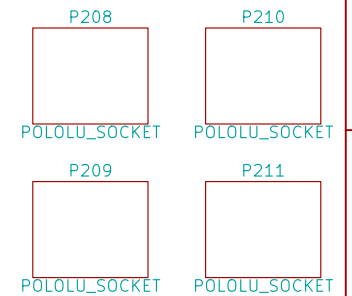
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Sheet: /	
Title: CRAMPS (Cape-RAMPS for BeagleBone)	
Size: A	Date: 7 may 2014
KiCad E.D.A.	Rev: v2.1
	Id: 1/5



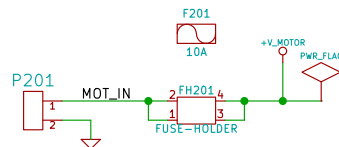
Shunts to set micro-stepping



24-pin Single-Row sockets for Pololu

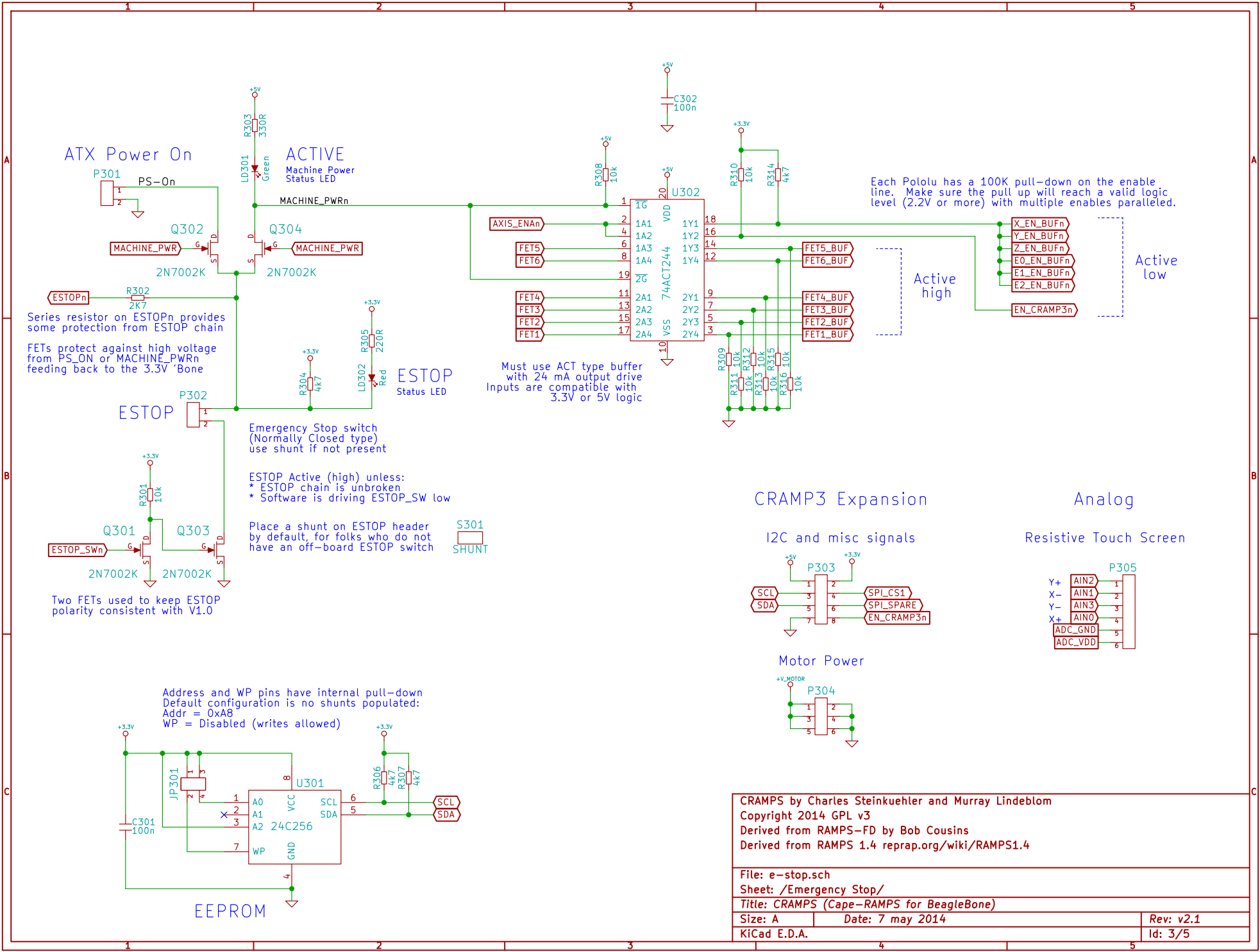


Motor Power
12-24V, 10A



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File: steppers.sch		Rev: v2.1	
Sheet: /Stepper Drivers/		Id: 2/5	
Title: CRAMPS (Cape-RAMPS for BeagleBone)			
Size: A	Date: 7 may 2014		
KiCad E.D.A.			



ATX Power On

ACTIVE
Machine Power
Status LED

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

ESTOP

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

S301
SHUNT

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)

EEPROM

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

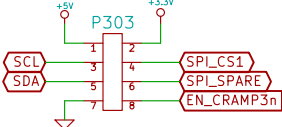
Each Pololu has a 100K pull-down on the enable line. Make sure the pull up will reach a valid logic level (2.2V or more) with multiple enables paralleled.

Active high

Active low

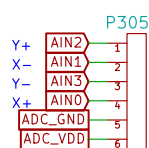
CRAMP3 Expansion

I2C and misc signals

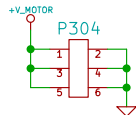


Analog

Resistive Touch Screen



Motor Power

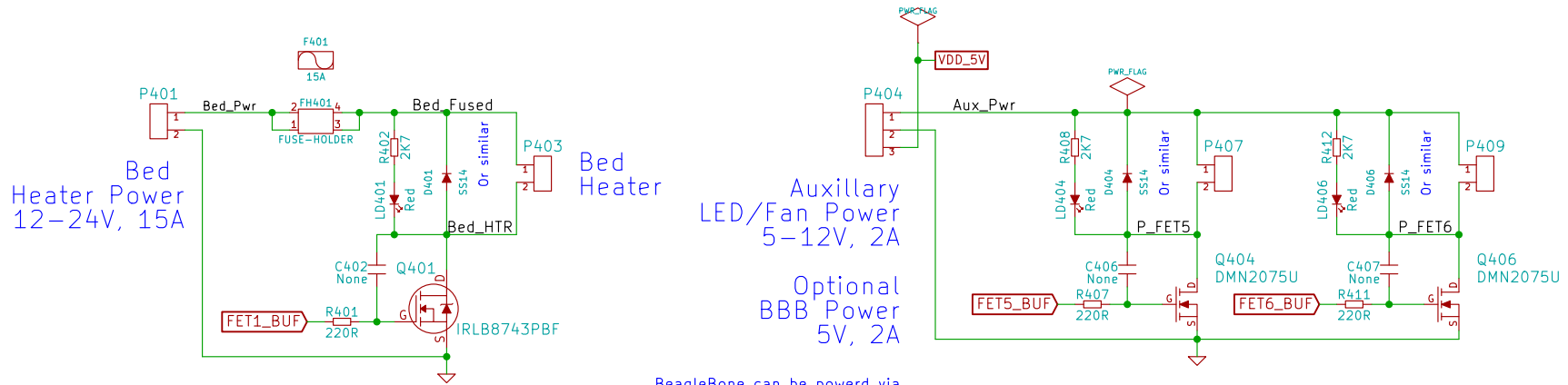


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Title: CRAMPS (Cape-RAMPS for BeagleBone)			
Size: A	Date: 7 may 2014	Id: 3/5	
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MOSFET Outputs

Non-inverting drivers



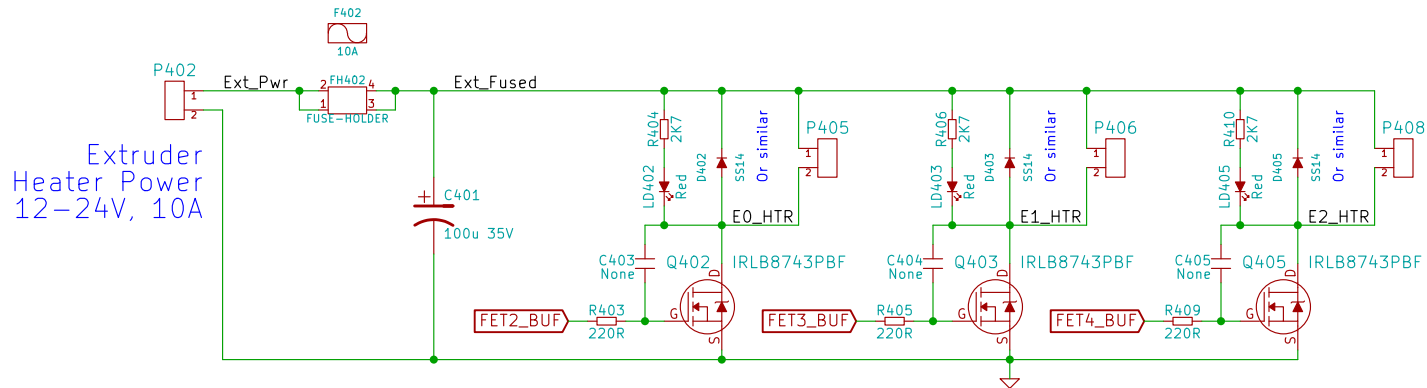
Bed
Heater Power
12-24V, 15A

Bed
Heater

Auxiliary
LED/Fan Power
5-12V, 2A

Optional
BBB Power
5V, 2A

BeagleBone can be powered via
native barrel jack or with the
Aux. power connector above



Extruder
Heater Power
12-24V, 10A

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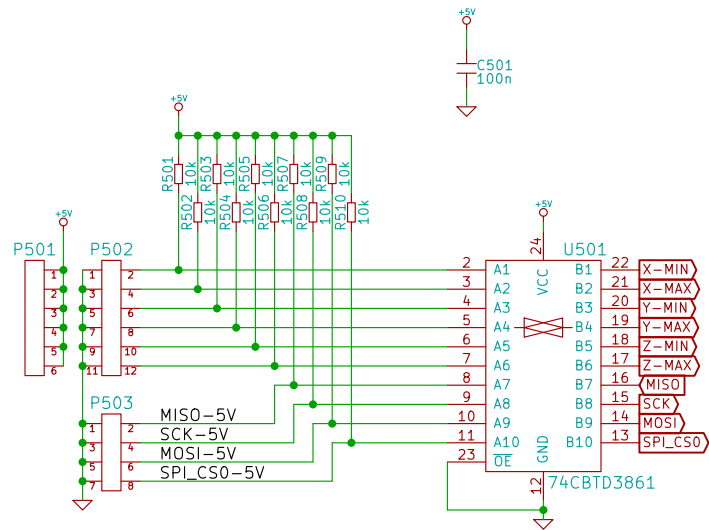
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Title: CRAMPS (Cape-RAMPS for BeagleBone)

Size: A Date: 7 may 2014

Rev: v2.1
Id: 4/5

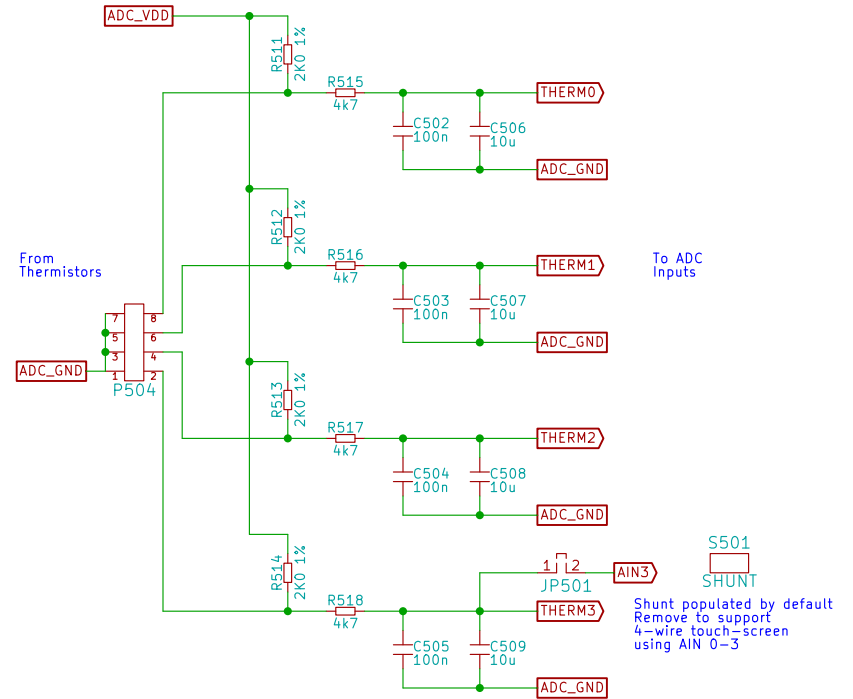
Endstops

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		Rev: v2.1	
Sheet: /Inputs/		Date: 7 may 2014	
Title: CRAMPS (Cape-RAMPS for BeagleBone)			
Size: A	Date: 7 may 2014	Rev: v2.1	
KiCad E.D.A.		Id: 5/5	