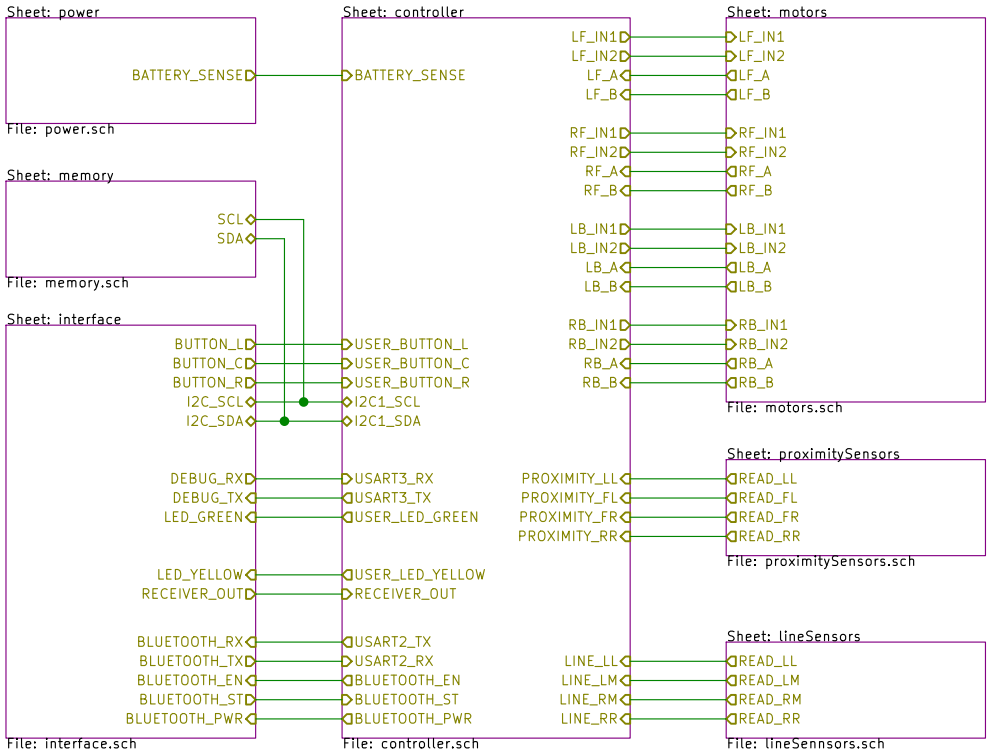


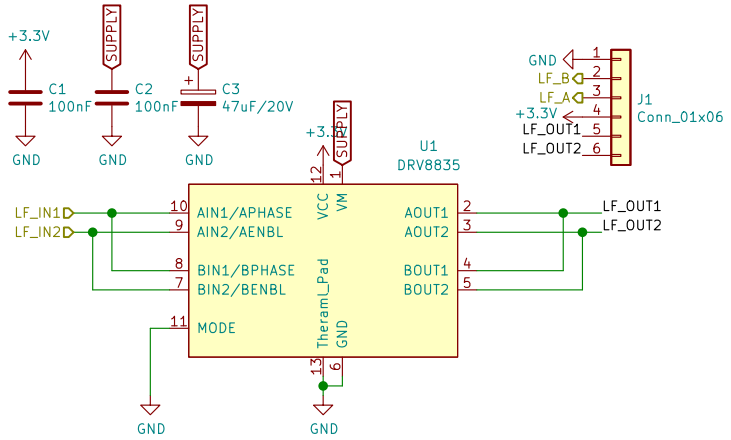
Sheet: /
File: sneak100_main_board.sch

Title: Sneak100 Main Board V1.1

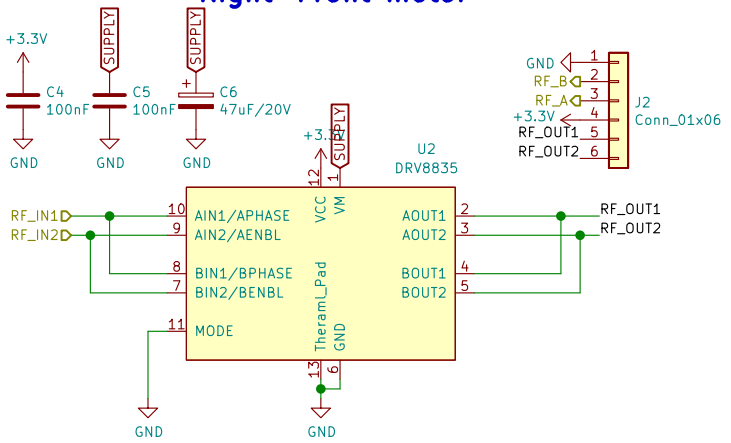
Size: A4	Date: November 2021	**Rev:**
KiCad E.D.A. kicad 5.1.12-84ad8e8a8692ubuntu20.04.1		Id: 1/8

H-Bridge control mode:
MODE = LOW -> IN/IN
MODE = HIGH -> PHASE/ENBL

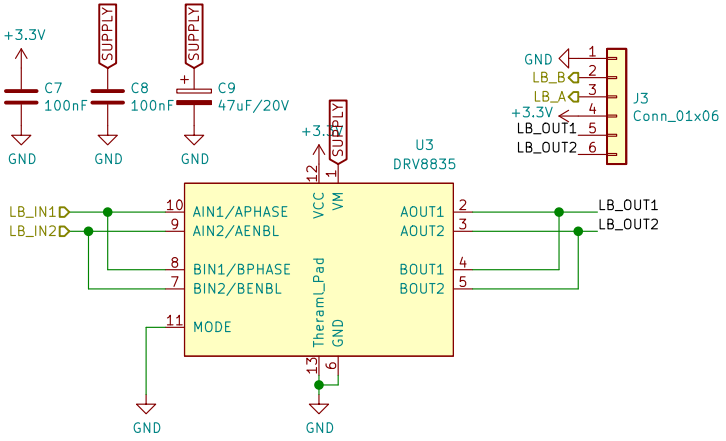
Left-Front motor



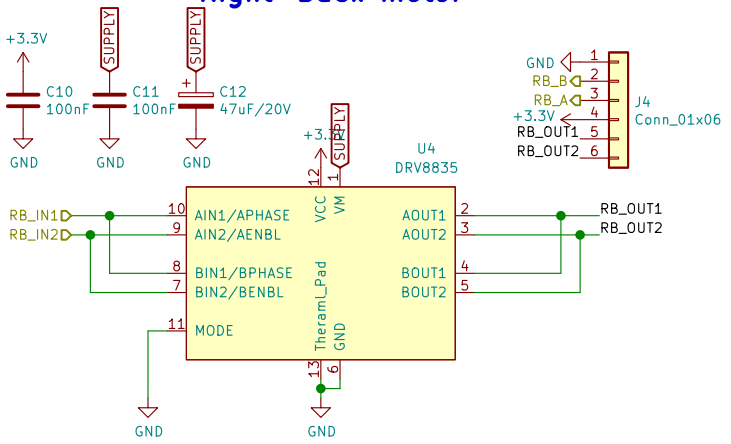
Right-Front motor



Left-Back motor



Right-Back motor



Sheet: /motors/
File: motors.sch

Title: Sneak100 Main Board V1.1

Size: A4	Date: November 2021	**Rev:**
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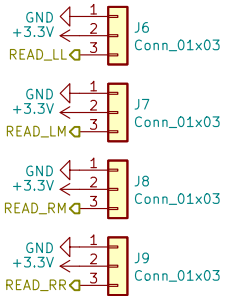
Line sensors

4x QTR-1A



Sheet: /lineSensors/
File: lineSennsors.sch

Title: Sneak100 Main Board V1.1

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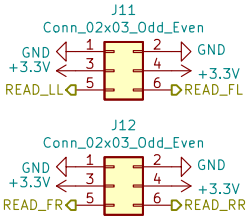
Proximity sensors

4x Proxima



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File: proximitySensors.sch		
Title: Sneak100 Main Board V1.1		
Size: A4	Date: November 2021	**Rev:**
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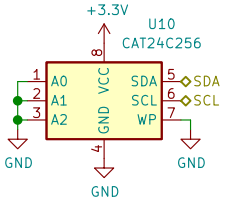
non-volatile memory

24C256 eeprom chip



I2C slave address: 1010 (A2) (A1) (A0)
current address: 0b01010000 = 0x50
0x50 lsh 1 = 0xA0

write protect WP:
low -> normal operation
high -> memory protected against write operations

Sheet: /memory/ File: memory.sch		
Title: Sneak100 Main Board V1.1		
Size: A4	Date: November 2021	**Rev:**
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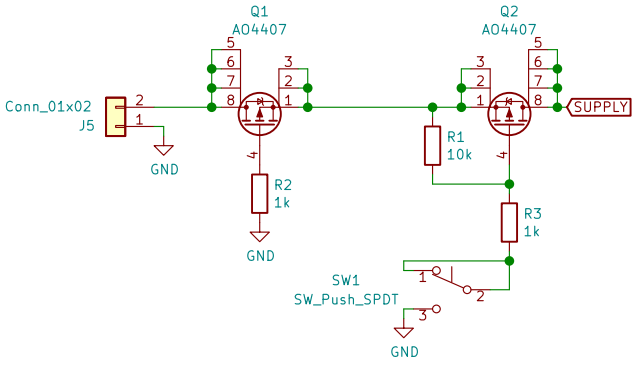
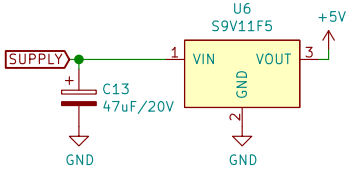
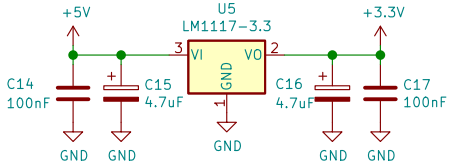
Power input menagement



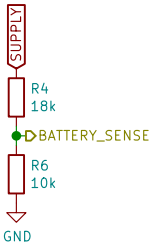
5V step-down converter



3.3V LDO regulator



Battery level sense



Voltage divider calculations:

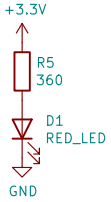
U_in max = 8.4V
U_out max = 3V

U_out = U_in * R2/(R1+R2)
U_out * (R1+R2) = U_in * R2
U_out * R1+ U_out * R2 = U_in * R2
U_out * R1 = (U_in – U_out) * R2
R1 = R2 * (U_in – U_out)/U_out

assume R2 = 10k

R1 = 10000 * (8.4 – 3)/3 = 18 kohm

Power level indicator



Power red led current resistor calculations:

target current: I = 5mA
input voltage: U1= 3.3V
forward voltage: Uf = 1.6V

R = (U-Uf)/I
R_3.3V = (3.3 –1.6)/0.005 = 340 ohm –> 360 ohm

Sheet: /power/ File: power.sch		
Title: Sneak100 Main Board V1.1		
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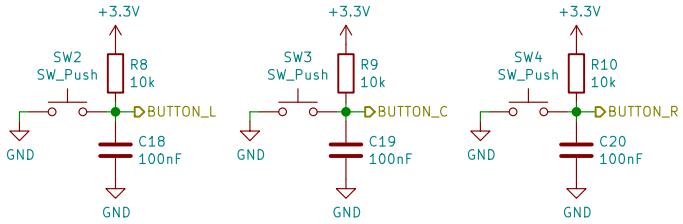
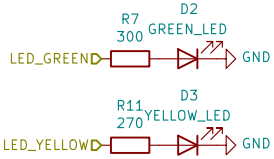
user buttons



user leds



Green led current resistor calculations:

target current: I = 5mA
input voltage: U = 3.3V
forward voltage: Uf = 2V

R = (U−Uf)/I
R = (3.3 −2)/0.005 = 260ohm −> 300ohm

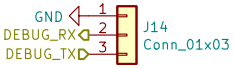
Yellow led current resistor calculations:

target current: I = 5mA
input voltage: U = 3.3V
forward voltage: Uf = 2V

R = (U−Uf)/I
R = (3.3 − 2)/0.005 = 260ohm − > 270ohm

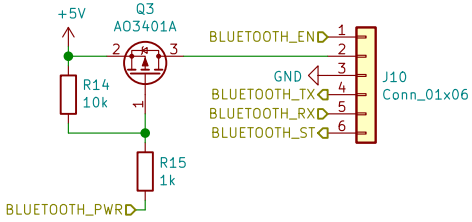
debug

USB−UART converter

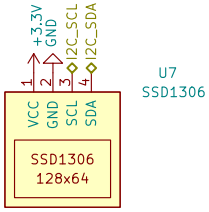


bluetooth module

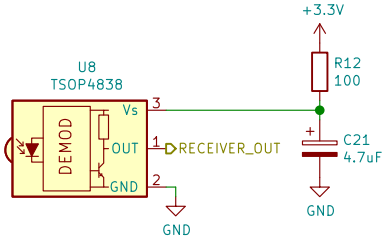
HC−05 module



OLED display



IR receiver



Sheet: /interface/		
File: interface.sch		
Title: Sneak100 Main Board V1.1		
Size: A4	Date: November 2021	**Rev:**
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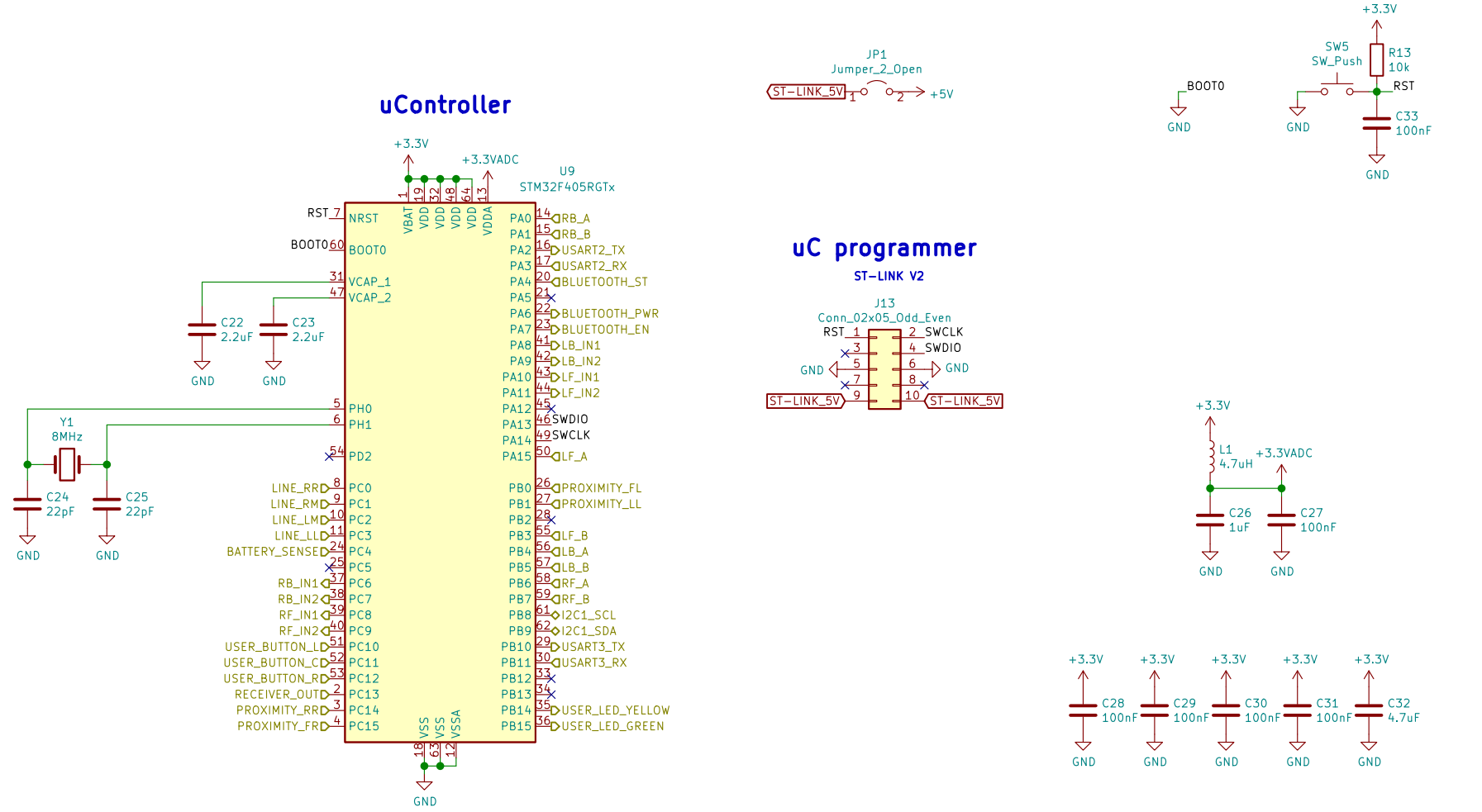

Sheet: /controller/		
File: controller.sch		
Title: Sneak100 Main Board V1.1		
Size: A4	Date: November 2021	**Rev:**
KiCad E.D.A. kicad 5.1.12-84ad8e8a8692ubuntu20.04.1		Id: 8/8