P-BOT JUNIOR MCU BOARD

Technical Manual Rev 1r0

e-Gizmo P-BOT Junior Rev 1R0 is a type of mobile robot that is so affordable price. It was developed to be more lightweight and easy to use. It is adapted to the version of PBOT1r0&2r0. This board is an all in one Mobile Robot board with on board IC ATmega168 MCU (16kB flash memory) and A3966 dual full-bridge PWM Motor driver. Directly upload using the USB cable from Computer to the PBOTjr board.

Features:

- Built-in IC ATmega168 with 16Kb Flash Memory
- Programmable microcontroller inside
- With A3966 dual full-bridge PWM Motor driver
- Directly upload using the USB cable from Computer to the PBOTjr board

General Specifications:

Power Input: 7 to 9VDC
External Input:
9 to 10VDC adaptor charger
On Board Peripherals:
- IC ATmega168 w/ 16KB Flash Memory
- IC A3966 Dual Full-bridge PWM Motor driver
- 2-Ch DC Motor Driver - 16V 1.5A
- 3-Ch IR Line Sensor -CNY70 sensor, 10mm range
- Slow charge battery charger circuit

PCB Dimension: 62X67mm

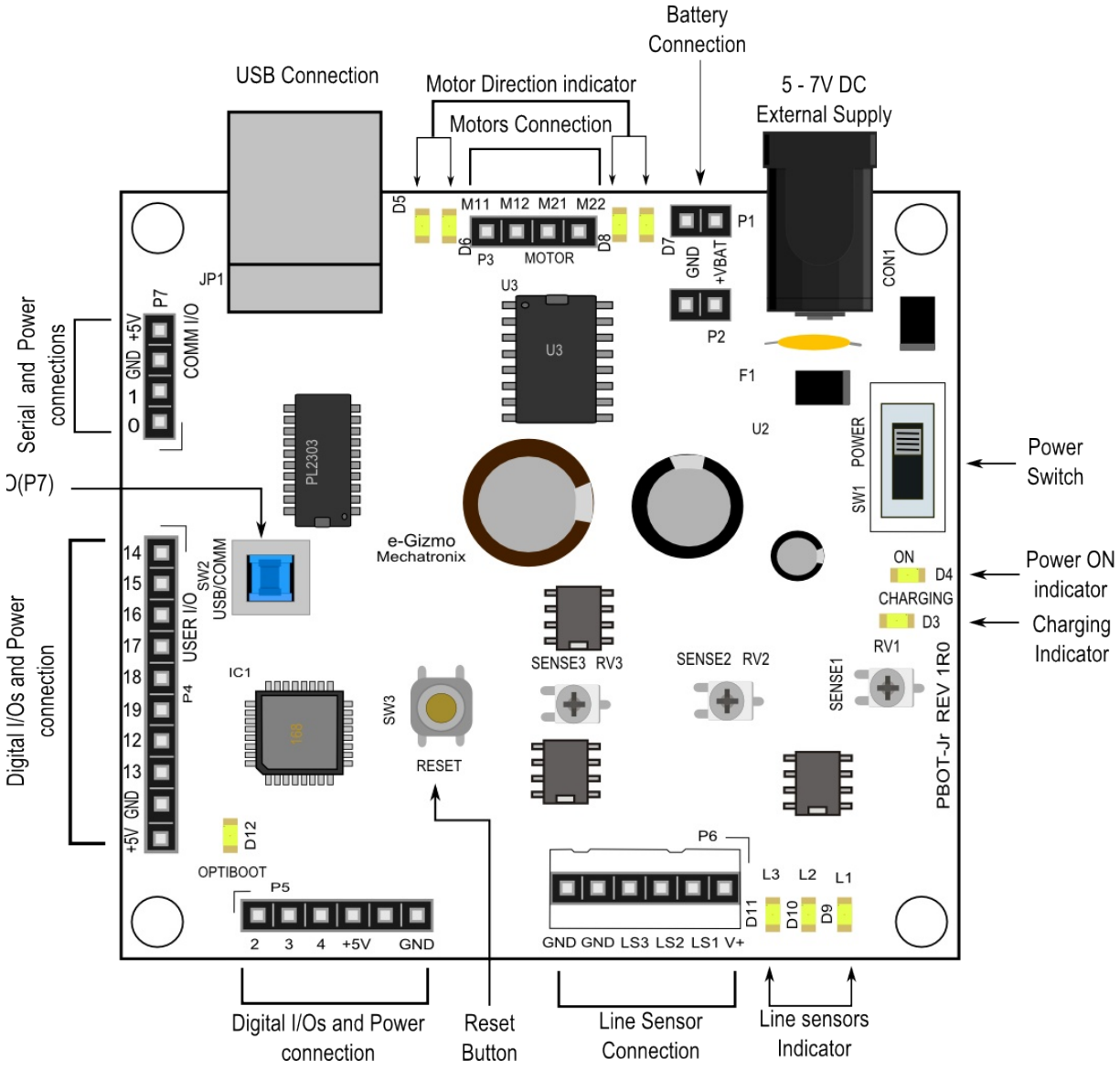

Figure 1: Major Presentation.

FOR UPLOADING:

1. *Connect the USB cable type A to type B.*
2. *Board selection: gizDuino (mini) w/ ATmega168P*
3. *Select Comport number: COM #*
4. *Press or Switch the SW2 in USB/COMM.*
5. *Put a battery supply in VBAT and Switch ON the Power, while the motor is running click Upload on the IDE.*
6. *If there's an error, just press the SW2 then upload it again, Until the error message will not show, It must be DONE UPLOADING.*

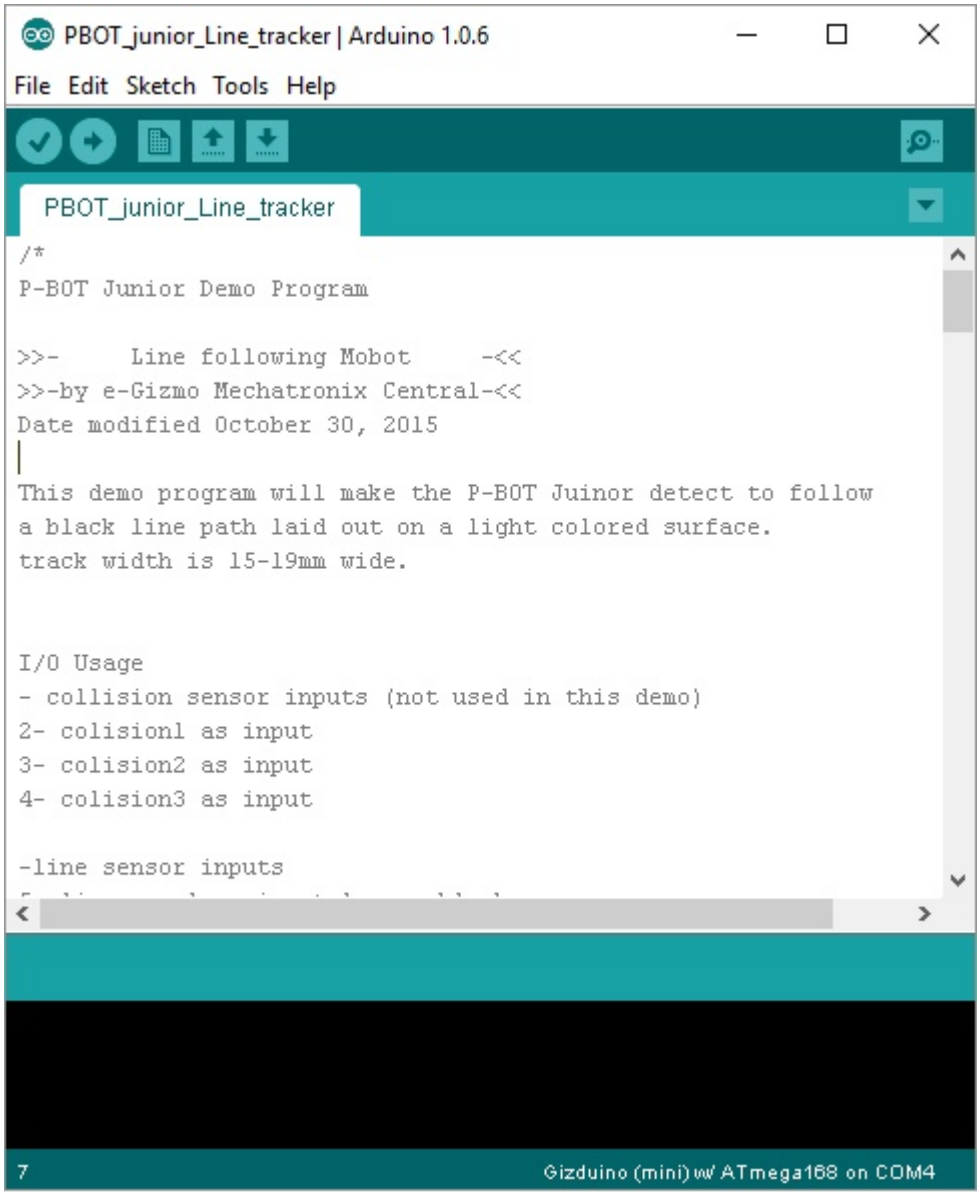

Figure 2: Uploading a code.

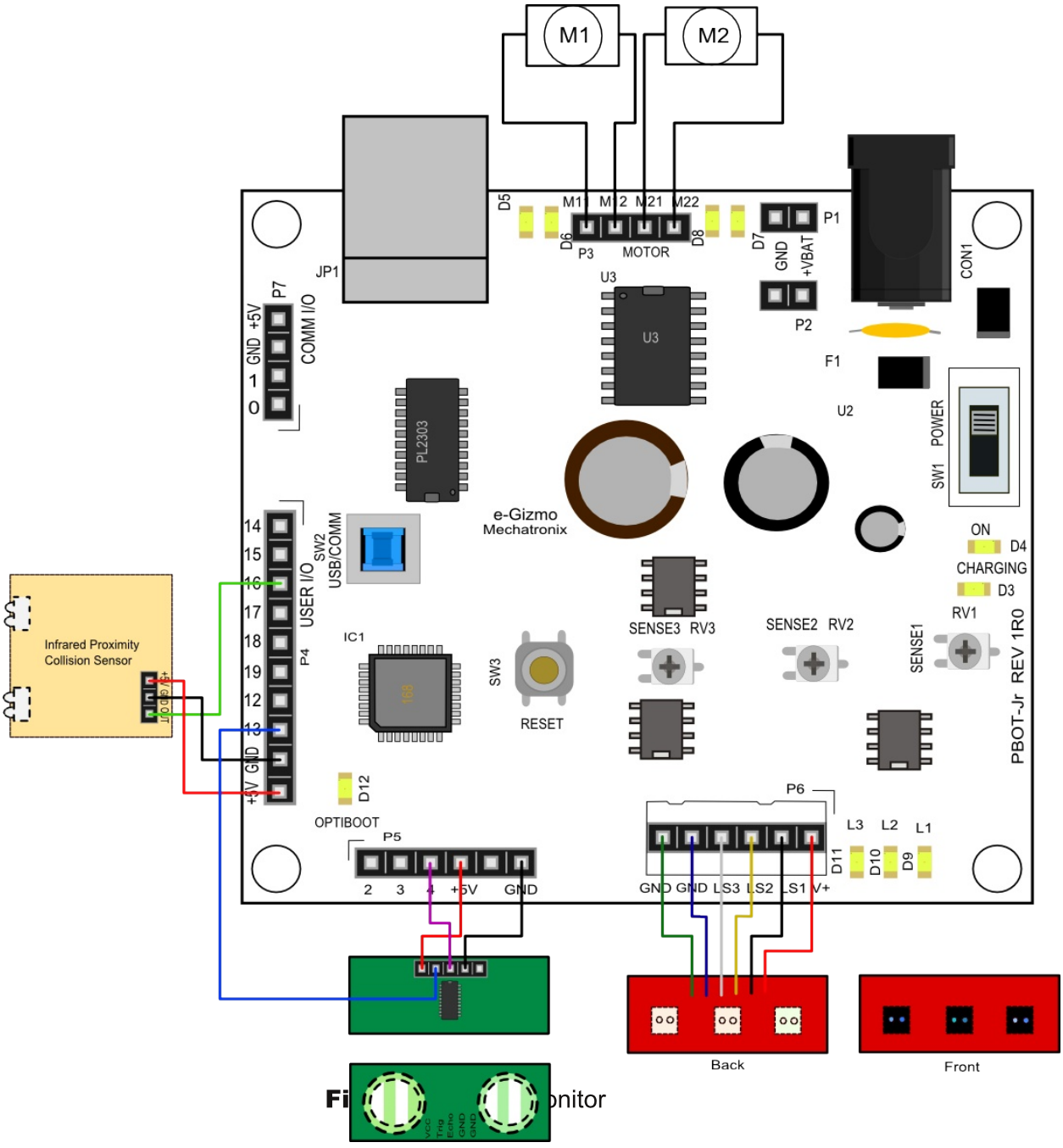

Figure 3: Connections of Proximity sensor, US-100, Line sensors and Motors on board.

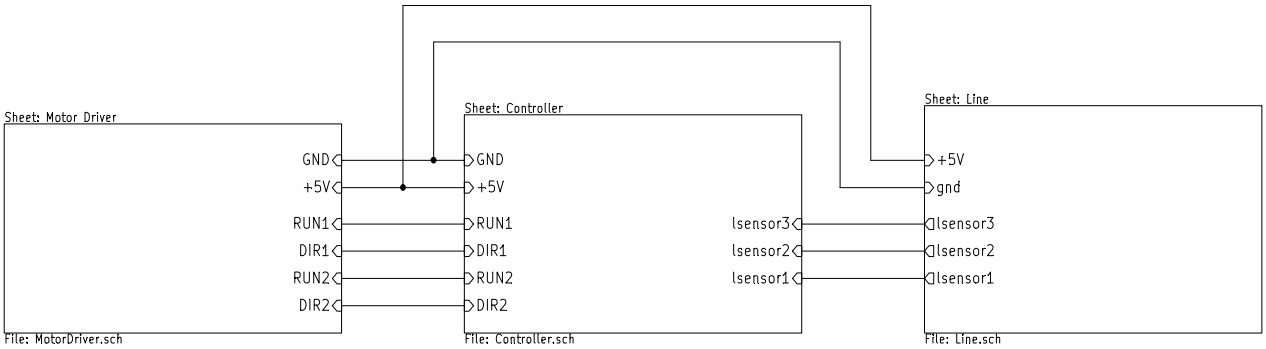

Figure 4: Block Diagram.

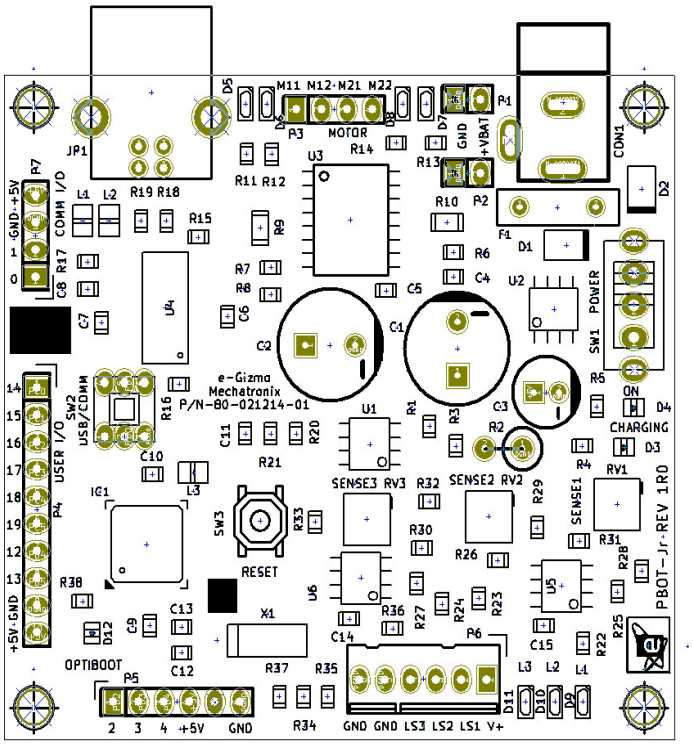

Figure 5: Parts Placement.

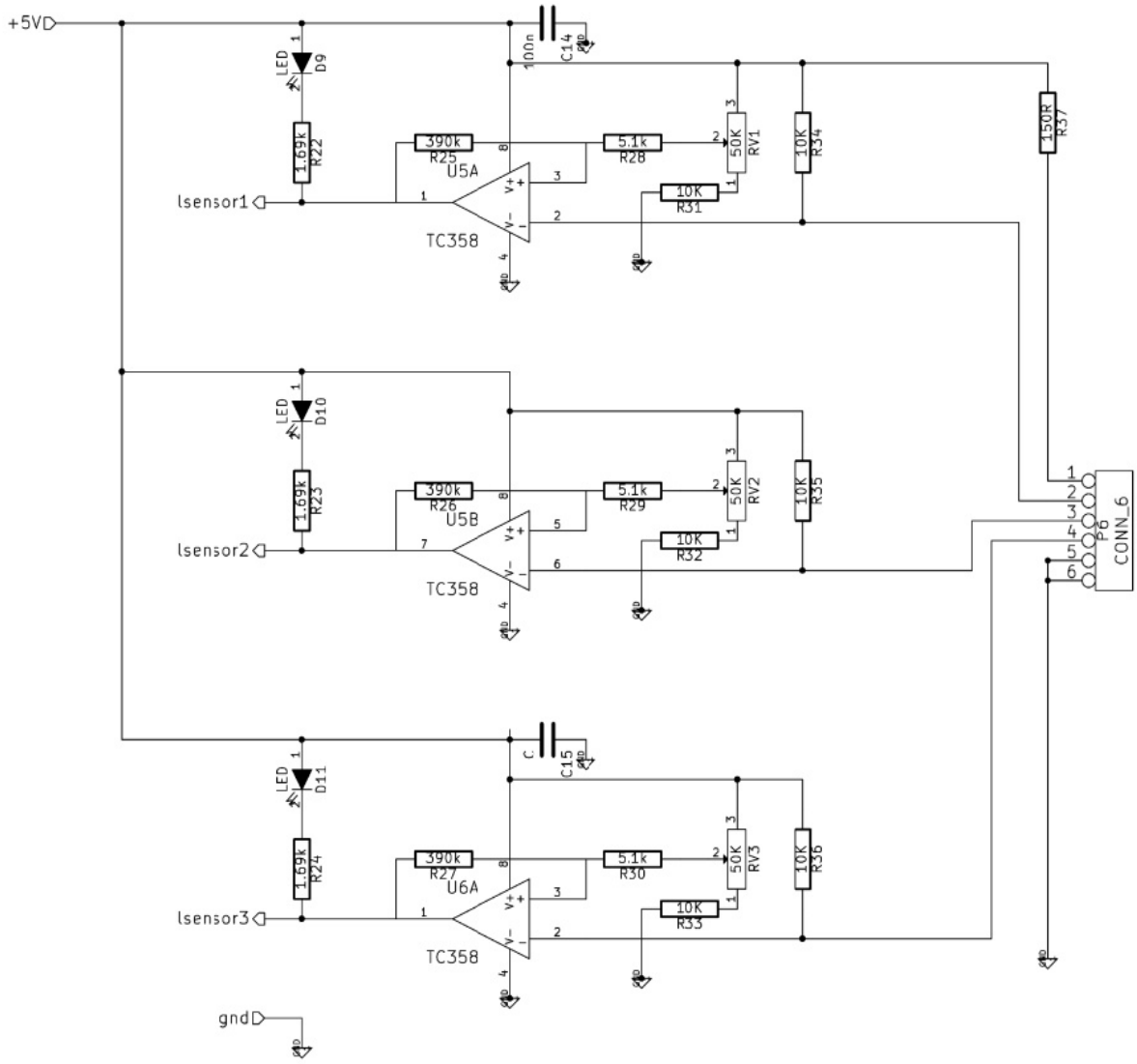

Figure 6: Line sensor.

Line sensor Connections:

Pin assignment	Descriptions
5	Line sensor 1 low on black
6	Line sensor 2
7	Line sensor 3

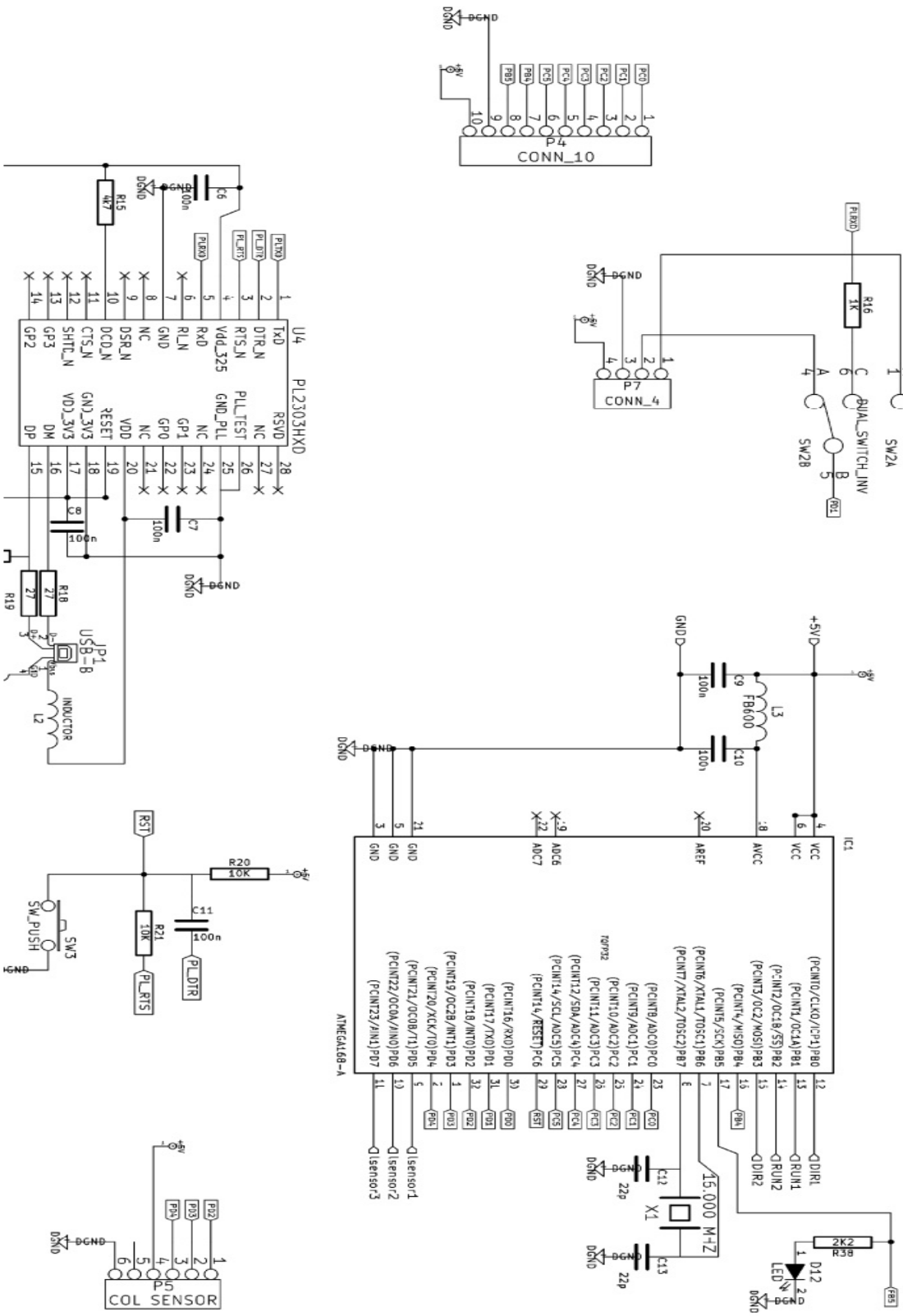

Figure 7: Microcontroller and Driver.

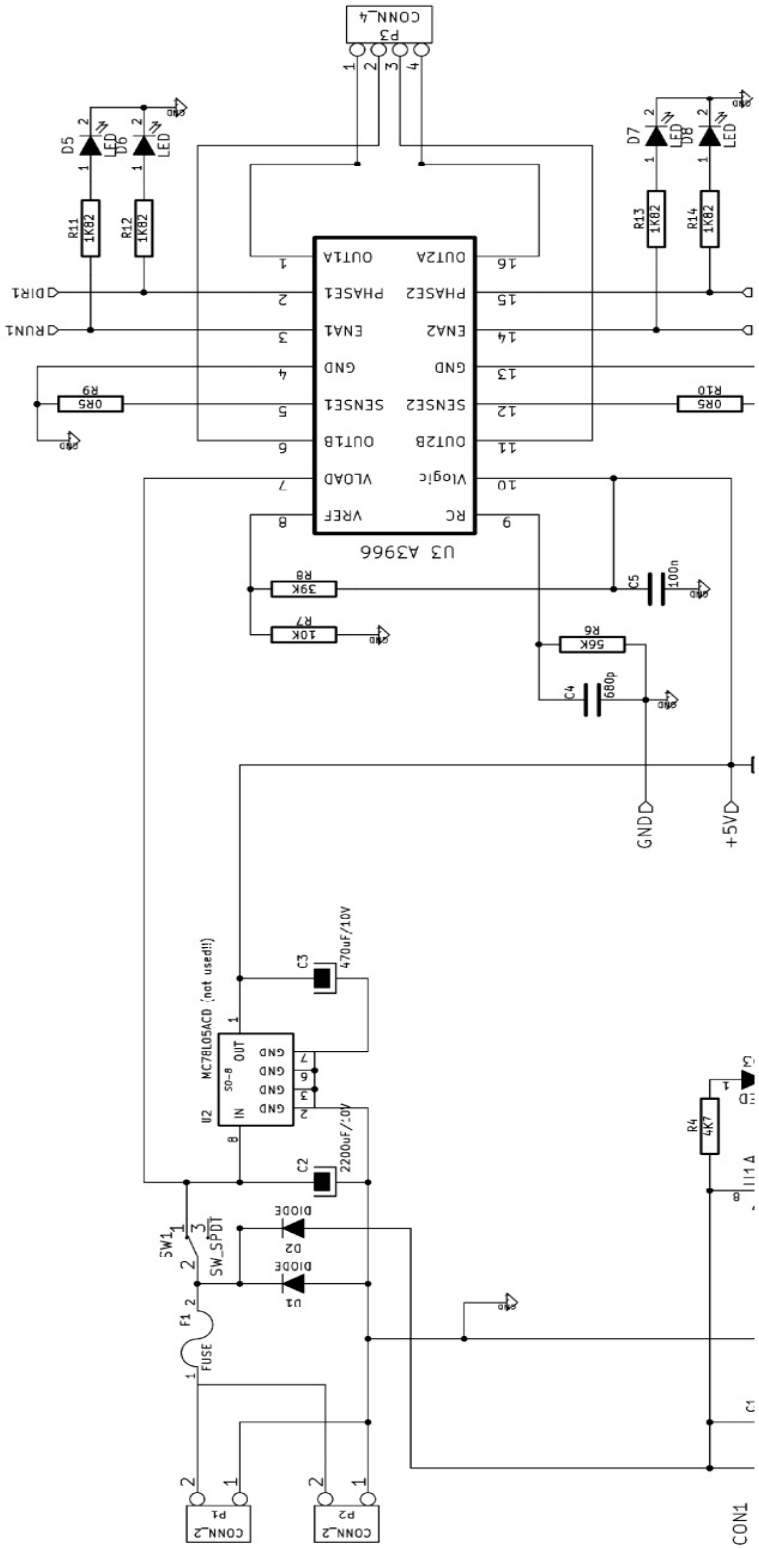

Figure 8: Motor driver.

Motor Connections:

Pin assignment	Descriptions
8	Motor 2 Direction
9	Motor 2 PWM/RUN
10	Motor 1 Direction
11	Motor 1 PWM/RUN

Forward direction:

Pin assignment	Output
8	LOW
9	LOW
10	LOW
11	LOW

STOP direction:

Pin assignment	Output
8	LOW
9	HIGH
10	HIGH
11	LOW

Backward direction:

Pin assignment	Output
8	HIGH
9	LOW
10	LOW
11	HIGH

Turn Left direction:

Pin assignment	Output
8	LOW
9	HIGH
10	LOW
11	LOW

Turn Right direction:

Pin assignment	Output
8	LOW
9	LOW
10	HIGH
11	LOW

The Motor driver is an A3966 IC where the output is inverted. (Below is the output signal)

OUTPUT:

Directions:

LOW = Forward direction
HIGH = Reversed direction

RUN:

LOW = full speed
HIGH = Stop

with PWM: (0 to 255)

0 = full speed
255 = stop

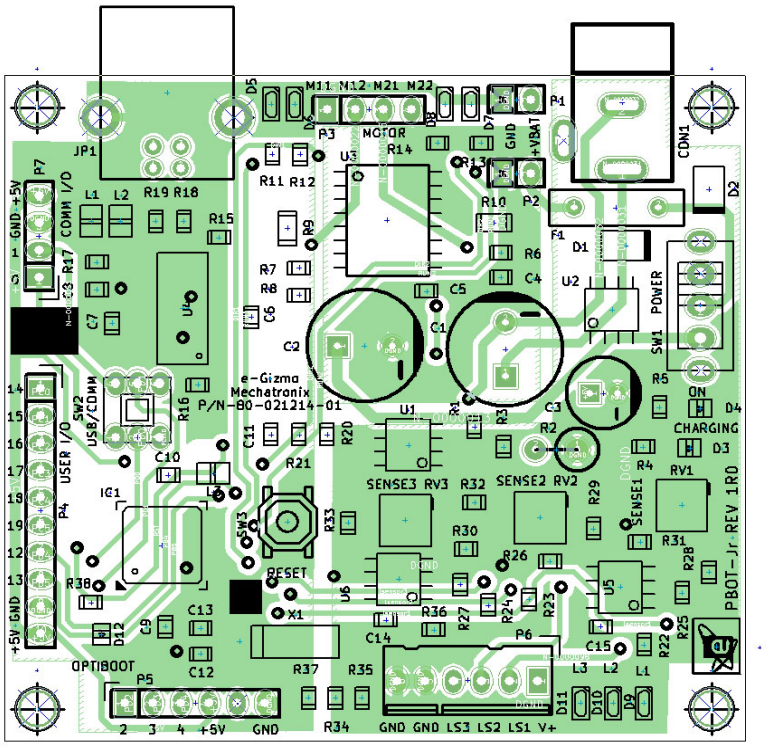

Figure 9: Bottom PCB layer Guide.

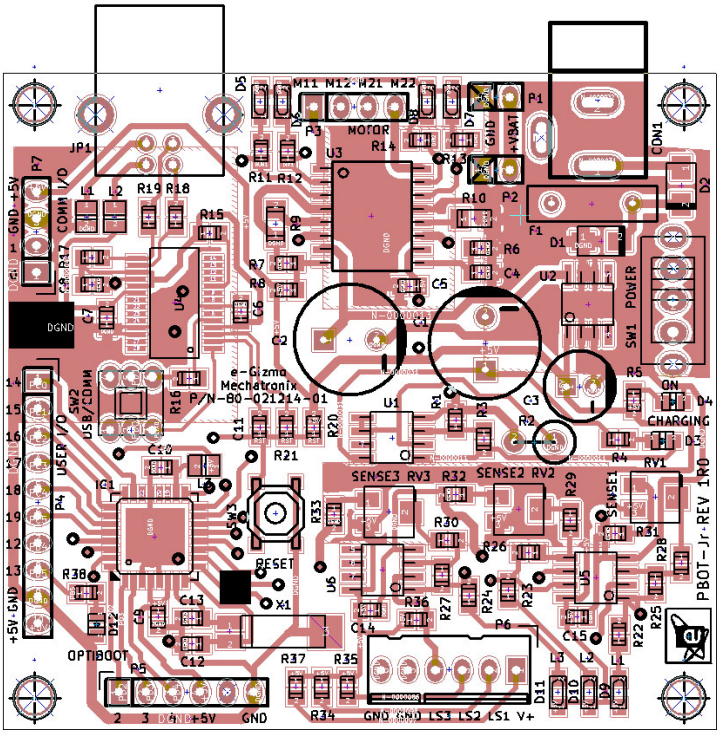

Figure 10: Top PCB layer Guide.