

Mini Robot Controller Using Infra-Red Remote for Small and Medium Size Robot

The Robot Controller is a very compact solution for controlling small and medium size robots using an Infrared remote. The project is fully Arduino compatible and consists of an ATMEGA328 microcontroller, 2 x BD6211 motor drivers, TSOP1838 IR sensor. BD6211 H-bridge is a full bridge driver for brush motor. The reference pin of BD6211 is pulled high and needs 2 x input to control the direction of the motor. 2 input pins of BD6211 are connected to ATMEGA328 for direction control of the motor. The project can be used to drive dual motors for 3-wheel robots or 4 x mini-DC motors. Input power supply 4.5V to 5.5V DC, the project can drive load up to 1A for each channel. Connector CN1 is provided to program the ATMEGA328 chips using Arduino IDE.

Arduino example code is available as a download to test the board. With this code user will be able to drive 3-wheel robot with 2 Motors, and 5 functions Forward, Reverse, Turn Left, Turn Right, and Stop

Follow bellow link to learn more about programming and boot-loader burning for new ATMEGA328 chip. <https://docs.arduino.cc/built-in-examples/arduino-isp/ArduinoToBreadboard>

Project tested using Spark fun IR Mini Remote (COM-14865) <https://www.sparkfun.com/products/14865>

Recommended to include IR Remote library before programming the board <https://github.com/Arduino-IRremote/Arduino-IRremote>

Remote Operations: 5 Switches used for full operations, 4 Directions and Select Switch -> Forward, Reverse, Turn Left, Turn Right, Stop

Arduino Pins

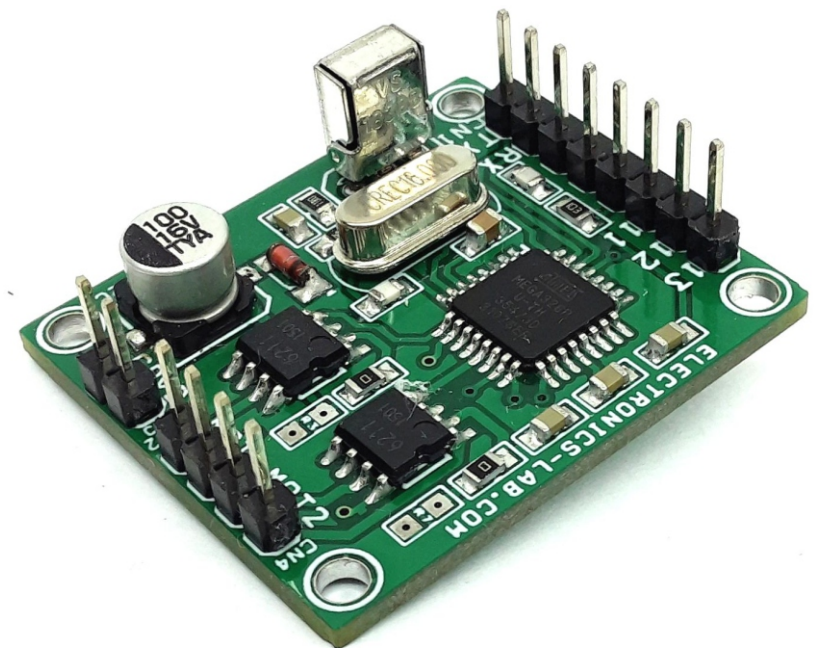
- Digital Pin D5 Motor-1 Driver BD6211 FIN
- Digital Pin D6 Motor-1 Driver BD6211 RIN
- Digital Pin D9 Motor-2 Driver BD6211 FIN
- Digital Pin D11 Motor-2 Driver BD6211 RIN
- Digital Pin D2 Infra-Red Sensor

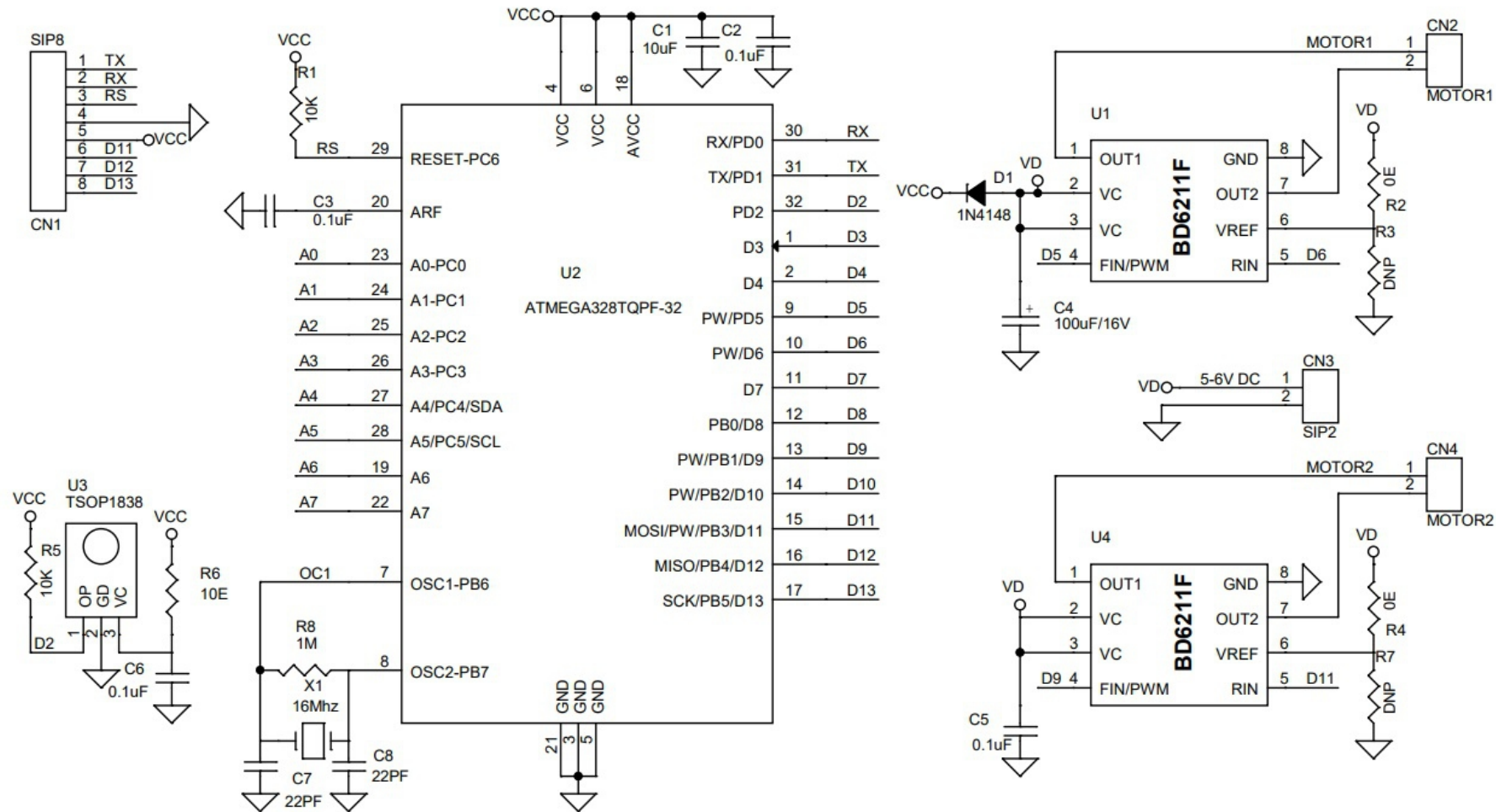
Connections

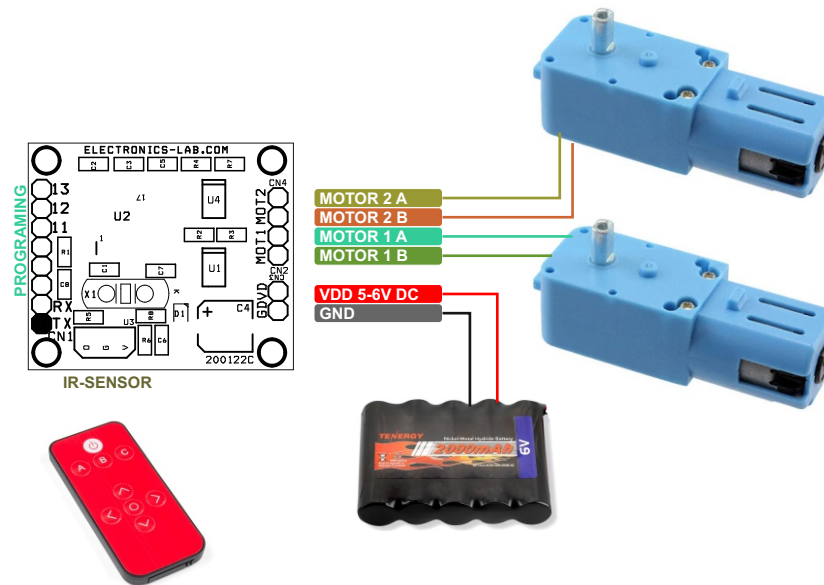
- CN1: Pin 1 = TX, Pin 2 = RX, Pin 3 = Reset, Pin 4 = GND, Pin 5 = VCC, Pin 6 = D11, Pin 7 = D12, Pin 8 = D13
- CN2: Pin 1 Motor 1, Pin 2 Motor 1
- CN3: Pin 1 VCC 4.5V to 5.5V DC, Pin 2 = GND
- CN4: Pin 1 Motor 2, Pin 2 Motor 2

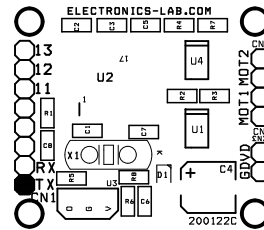
Features

- Power Supply 4.5V to 5.5V DC
- Load – Motor 1Amps Each Channel (1Amps + 1Amp)
- Four Protection Circuits Provided for Motor Controller: OCP, OVP, TSD and UVLO
- PCB Dimensions 34.61 x 30.00mm
- 4 x 2.5 Mounting Holes

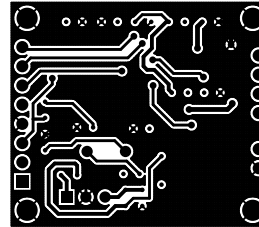




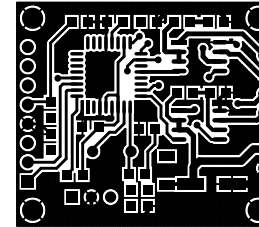




SILK SCREEN TOP



BOTTOM LAYER



TOP LAYER

PCB DIMENSIONS 34.61 MM X 30.00MM

BOM						
NO	QNTY.	REF	DESC	MANUFACTURER	SUPPLIER	SUPPLIER PART NO
1	1	CN1	8 PIN MALE HEADER PITCH 2.54MM	WURTH	DIGIKEY	732-5321-ND
2	1	CN2	2 PIN MALE HEADER PITCH 2.54MM	WURTH	DIGIKEY	732-5315-ND
3	1	CN3	2 PIN MALE HEADER PITCH 2.54MM	WURTH	DIGIKEY	732-5315-ND
4	1	CN4	2 PIN MALE HEADER PITCH 2.54MM	WURTH	DIGIKEY	732-5315-ND
5	1	C1	10uF/16V CERAMIC SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
6	4	C2,C3,C5,C6	0.1uF/50V CERAMIC SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
7	1	C4	100uF/16V SMD ELECTROLYTIC	AISHI CAPACITOR	DIGIKEY	3222-SVL1CM101E06E00RS153TR-ND
8	2	C7,C8	22PF/50V CERAMIC SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
9	1	D1	1N4148 SMD	MICROCHIP	DIGIKEY	1N4148UR-1-ND
10	2	R1,R5	10K 5% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
11	2	R2,R4	0E SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
12	2	R3,R7	DNP			
13	1	R6	10E 5% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
14	1	R8	1M 5% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
15	2	U1,U4	BD6211F SOIC8	ROHM	DIGIKEY	BD6211F-E2TR-ND
16	1	U2	ATMEGA328TQPF-32	MICROCHIP	DIGIKEY	ATMEGA328PB-AURCT-ND
17	1	U3	TSOP1838/TSOP18138	VISHAY	DIGIKEY	TSOP18138-ND
18	1	X1	16Mhz	ECS INC	DIGIKEY	X1103-ND

