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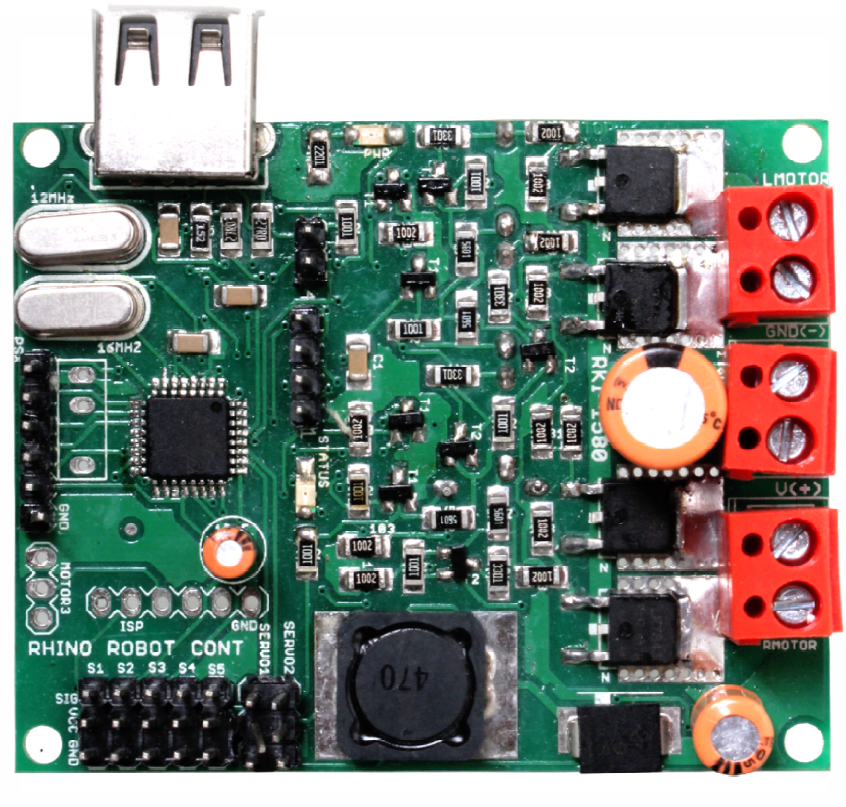
EASY TO USE, VERSATILE ROBOTICS KITS



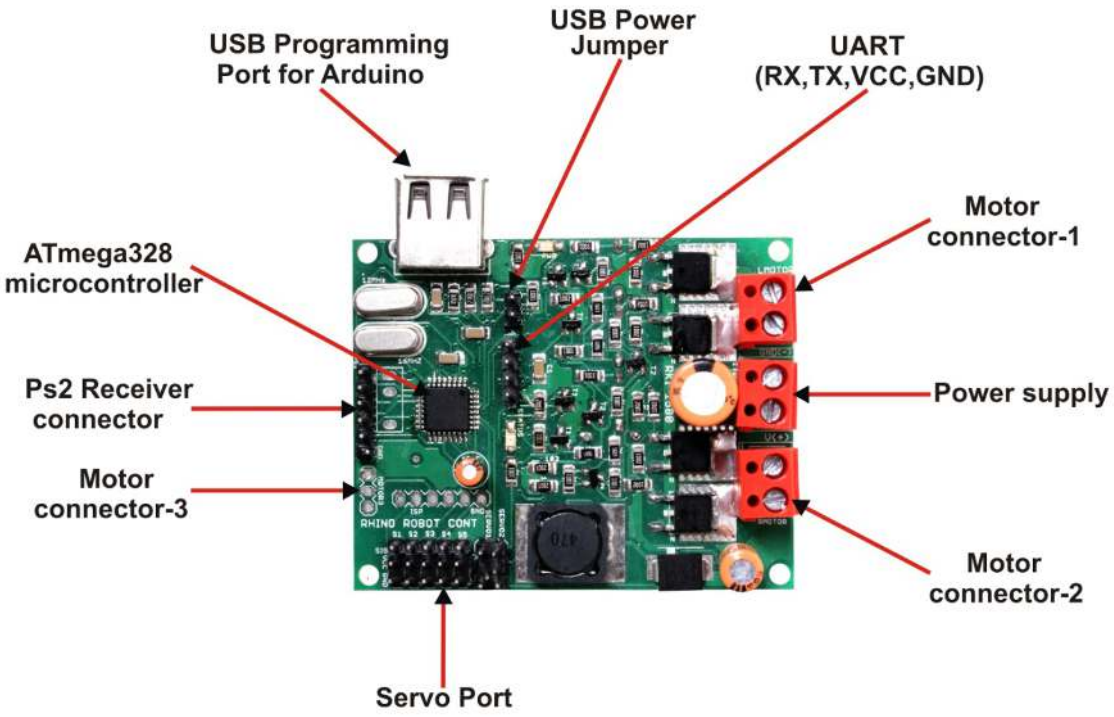
ARDUINO UNO R3 BASED 20A ROBOT CONTROL BOARD [RKI-1580]

1. Introduction:

The Arduino UNO R3 based 20A robot control board is a versatile motor controller for driving dual dc motor rated upto 20A each. Key features include multi-functionality, incorporation of ATmega328P-AU microcontroller (Arduino Uno R3 based) and 20A motor driver into a single control board designed for robotics applications. It can drive 2 robot driving motors (Connected two motors in parallel for 4 wheeled robot) in skid steer control with analog speed control. Also can control up to eight servo motors connected at servo port and motor connector-3.

Most important feature it includes is that it can be programmed by Arduino IDE with the use of USB slot provided on the board. It can be controlled by UART communication, PS2 or IR remote control.

Due to its expansion capabilities the board can be used to control all robots starting from beginner's robot to advanced robots with multiple functionalities such as PS2 or IR controlled robot. It can control up to 20Amp of current on each channel.



2. Features of board:

Robot control board provides the following features:

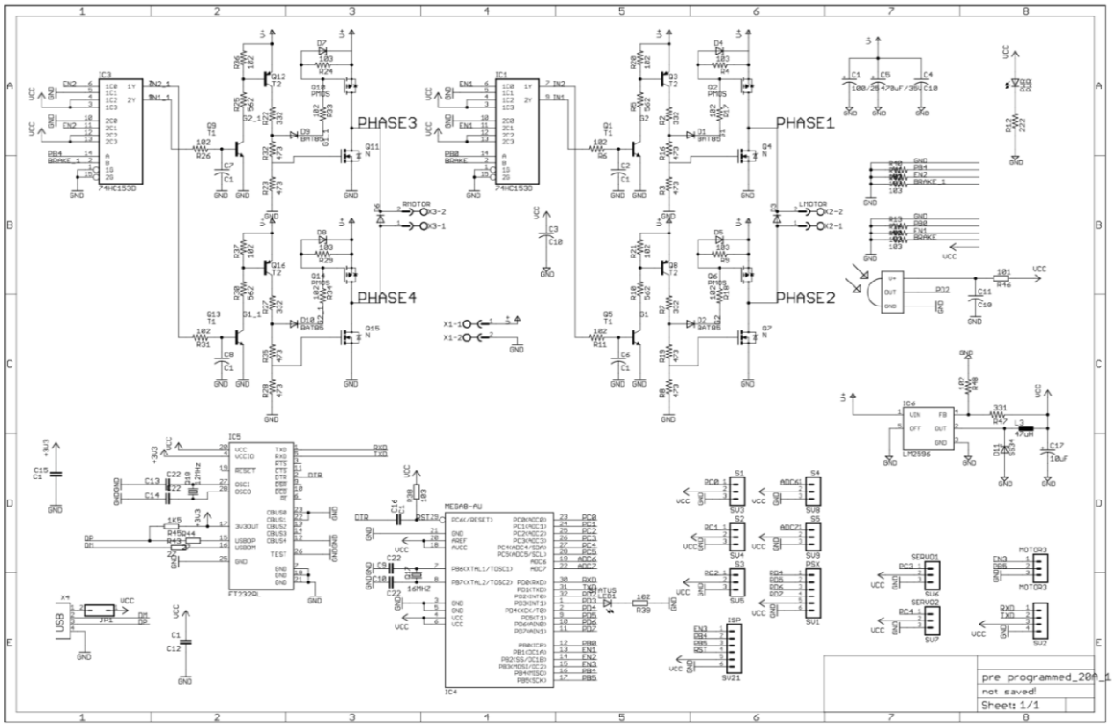
- **Incorporation of ATmega328P-AU microcontroller (Arduino UNO R3 based) and 20A motor driver**
- **Included all the features of Arduino UNO**
- **Support Arduino IDE Interfacing**
- **Analog speed control for 2 DC driving DC motors with Skid Steer Control**
- **Up to 8 servo motor control capability**
- **PS2 and IR remote compatible for wireless robot control applications**
- **Support UART Interfacing.**

- Integrated USB Virtual COM port for programming
- Screw terminals for all power and signal wiring
- Status LEDs indicate Power
- Dimensions : 690 mm x 640 mm x 15 mm

3. Driver Specifications:

Parameter	Min	Max
Input voltage	7V	24V
Supply current (@power supply)	1A	20A
Absolute maximum peak current	50A	
Current rating	Maximum 20A	
Continuous Current(< 10seconds)	~ 20A	
Continuous Current (< 60seconds)	~ 10A	
Continuous Current (> 60seconds)	~ 5A (without heat sink on MOSFETS)	
Interface	TTL/CMOS	
Protection	Protection circuit to avoid any electrical fluctuations	
Breaking feature	Breaking feature Included without affecting performance of MCU	
Control	Via PWM | PPM | TTL Signal	
Dimensions	690 mm x 640 mm x 15 mm	

4. Schematics:



5. Steps for program IDE sketch:

Step 1. **Install PL2303 driver**

Step 2. **Open Arduino IDE**

Step 3. **Select com port**

Step 4. **Select Board (Arduino UNO)**

Step 5. **Open sample code**

Step 6. **Burn/Upload**

6. Reference Code:

```
int RightMotor = 9;     // pin maping according to schematics
int LeftMotor = 10;
int R_dir = 8;
int L_dir = 12;


void setup(){
  // reducing the pwm freq
    TCCR1B = TCCR1B & 0B11111000 | 0B00000100;
    pinMode(RightMotor,OUTPUT);
    pinMode(LeftMotor,OUTPUT);
    pinMode(R_dir,OUTPUT);
    pinMode(L_dir,OUTPUT);
}
void loop(){
        Forward(255);
        delay(3000);
        Backward(255);
        delay(3000);
}
void Forward(unsigned int Pwm)
{
        digitalWrite(R_dir,LOW);
```

```
        digitalWrite(L_dir,LOW);
        analogWrite(RightMotor,Pwm);
        analogWrite(LeftMotor,Pwm);
}
void Backward(unsigned int Pwm)
{
        digitalWrite(R_dir,HIGH);
        digitalWrite(L_dir,HIGH);
        analogWrite(RightMotor,Pwm);
        analogWrite(LeftMotor,Pwm);
}
void Left(unsigned int Pwm)
{
        digitalWrite(R_dir,LOW);
        digitalWrite(L_dir,HIGH);
        analogWrite(RightMotor,Pwm);
        analogWrite(LeftMotor,Pwm);
}
void Right(unsigned int Pwm)
{
        digitalWrite(R_dir,HIGH);
        digitalWrite(L_dir,LOW);
        analogWrite(RightMotor,Pwm);
        analogWrite(LeftMotor,Pwm);
```

```
}
void Stop()
{
        digitalWrite(RightMotor,LOW);
        digitalWrite(LeftMotor,LOW);
}
```

7. Additional Information:

The following relevant links are available and should be referred to:

1. **STREAK RC - ALL TERRAIN ROBOT READY TO USE WITH 1KM RANGE**

   http://robokits.co.in/robots/wireless-robot-kit/streak-rc-all-terrain-robot-ready-to-use-with-1km-range?cPath=10_161&

2. **STREAK RC - ALL TERRAIN ROBOT DIY KIT**

   http://robokits.co.in/robots/wireless-robot-kit/streak-rc-all-terrain-robot-diy-kit?cPath=10_161&

   You can add your creativity to extending and exploring new exiting experiments many more.