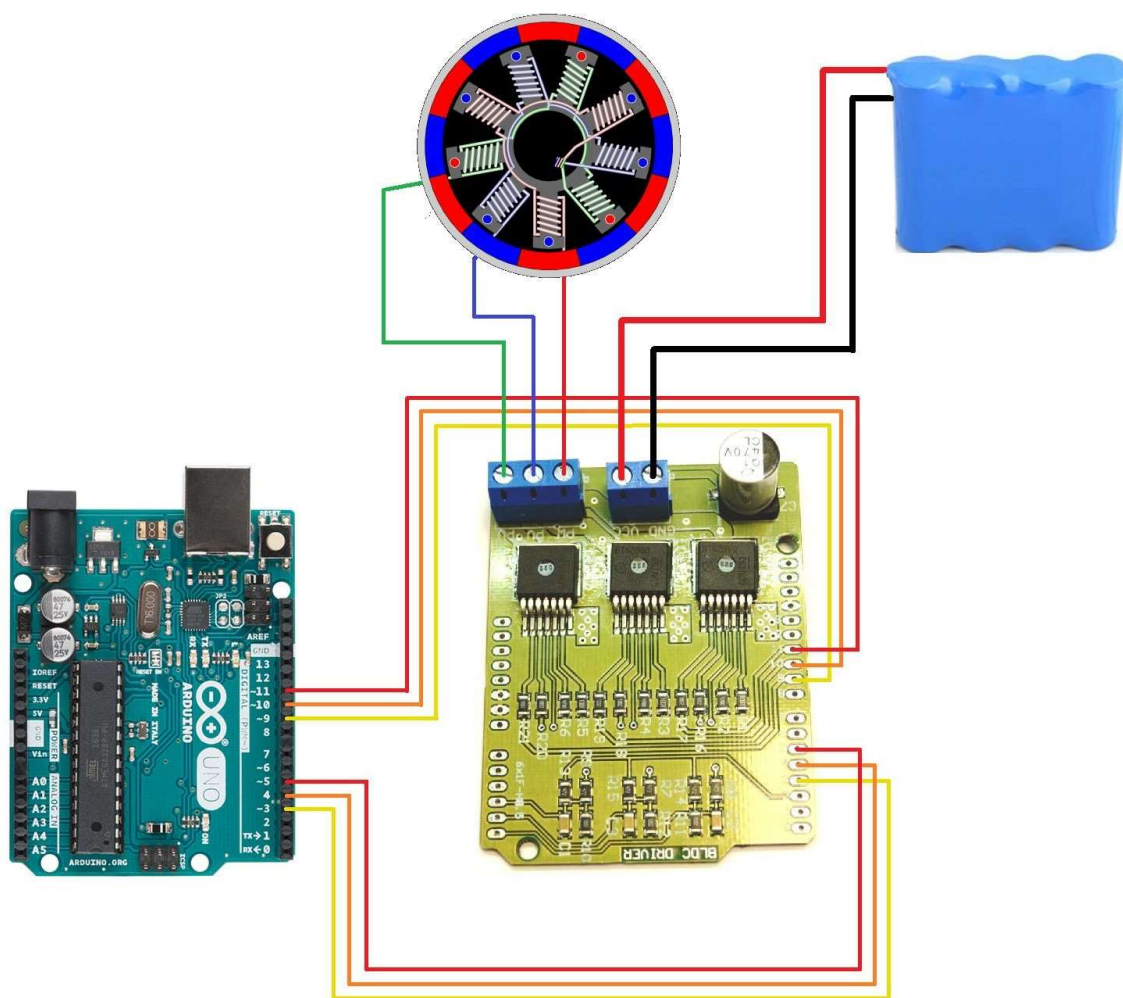


WELCOME TO ARDUINO COMPATIBLE BLDC SHIELD

Arduino compatible BLDC Shield allows Arduino Uno or any other compatible boards to control brushless DC motors. The shield contains 3 half bridge BTN8960TA chips, which allows 30A output current. Power supply is provided for the half bridge chips from the terminals located on the upper side of the board marked as VCC and GND. Power supply 12 - 36V. Size - 69mm x 53mm. Power output is sent to motor through terminals U, V and W. Max output current on every phase: 30A Working voltage of I/O ports: 3.3V or 5V logical level Driver: BTN8960TA Two way control of Brushless DC Motor, three brushed motors in one direction or one brushed motor in two directions. Working voltage of motors – 12-36V.

HARDWARE CONNECTION



When you connect your **Arduino compatible BLDC Shield** to Arduino microcontroller board you should proceed as follows:

backEMF-U

Arduino pin	Pin name	Function
3	inhibitU	U
4	inhibitV	V
5	inhibitW	W
9	inputU	Input of the half bridge, controlling phase U
10	inputV	Input of the half bridge, controlling phase V
11	inputW	Input of the half bridge, controlling phase W

inhibitU, V, W - These pins purpose is to inhibit outputs of halfbridge ics. When set to low integrated circuit goes in sleep mode. Thus at any moment every phase can be floating, so that no current flows through the brushless dc motor.

inputU, V, W -- These pins purpose is to set HIGH/LOW level at the three outputs of the Arduino compatible BLDC Shield. That happens only when corresponding inhibit pins are set to high level.

Example arduino code

```
double Angle = 0; //current angle of the sine
signals double AngleB = 0;
double AngleC = 0;
double stepAngle = 1; //the rotation in angles per step of
the motor
int inputU = 9;
int inputV =
10; int
inputW = 11;
int inhibitU =
3; int inhibitV
= 4; int
inhibitW = 5;
void setup() {
  TCCR1B = TCCR1B & 0b11111000 | 0x01; // set PWM frequency @ 31250 Hz for Pins 9 and
  10
  TCCR2B = TCCR2B & 0b11111000 | 0x01; // set PWM frequency @ 31250 Hz for Pins
  11 and 3 (3 not used) ICR1 = 255 ; // 8 bit resolution
  //ICR1 = 1023 ; // 10 bit
  resolution
  Serial.begin(9600);
```

```
pinMode(inputU,OUTPUT);
pinMode(inputV,OUTPUT);
pinMode(inputW,OUTPUT);
pinMode(inhibitU,OUTPUT
);
pinMode(inhibitV,OUTPUT
);
pinMode(inhibitW,OUTPUT
);    digitalWrite(inhibitU,
HIGH);
```

```
digitalWrite(inhibitV,
HIGH);
digitalWrite(inhibitW,
HIGH);
}
void
loop()  {
  sinStep();
  delayMicroseconds(200);//the motor will move very slowly
}
```

```
void          sinStep(){
  Angle=Angle+stepAngle;
  //Serial.println(stepAngle);
  if(Angle>360)
  {
    Angle=Angle-360;
  }
  AngleB=Angle+
  120;
  if(AngleB>360
  )
  {
    AngleB=AngleB-360;
  }
  AngleC=Angle+
  240;
  if(AngleC>360
  )
  {
```

```
    AngleC=AngleC-360;
  }
  int
  mota=(int)127*sin(Angle*3.14/180)+1
  27;                                int
  motb=(int)127*sin(AngleB*3.14/180)
  +127;                                int
  motc=(int)127*sin(AngleC*3.14/180)
  +127;  analogWrite(inputU,  mota);
  analogWrite(inputV,      motb);
  analogWrite(inputW, motc);
}
```