### POST LAB TASK

Design and implement an embedded system to control the intensity of 220V AC light using variable resistor interfaced with controller using TRIAC and Zero Crossing Detector Circuit.

**PROTEUS SIMULATIONS**

#### Zero Crossing detector Circuit

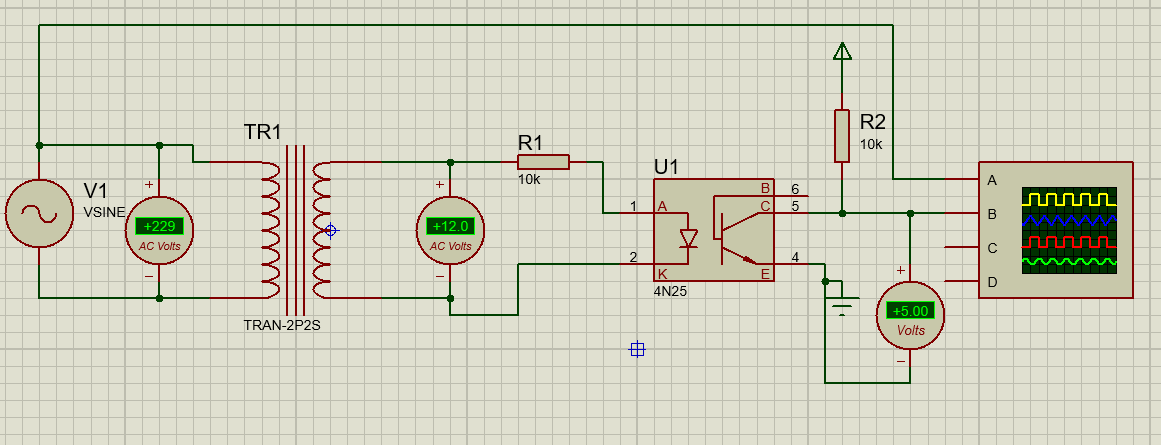


Figure 1: Zero Crossing Detector Circuit

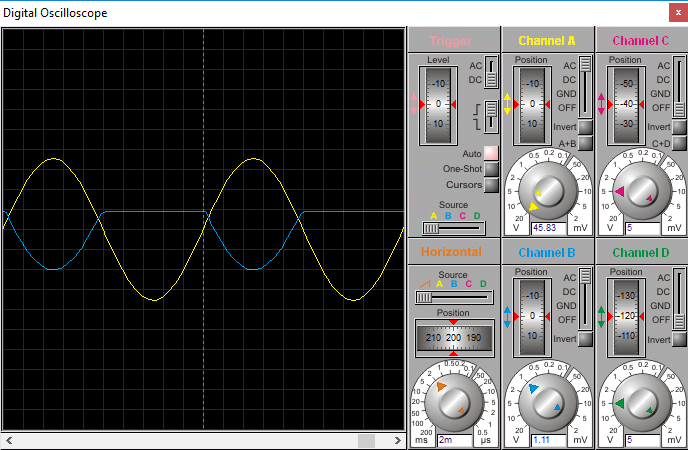


Figure 2: Zero Crossing detector circuit output

#### Triac Switching control Circuit:

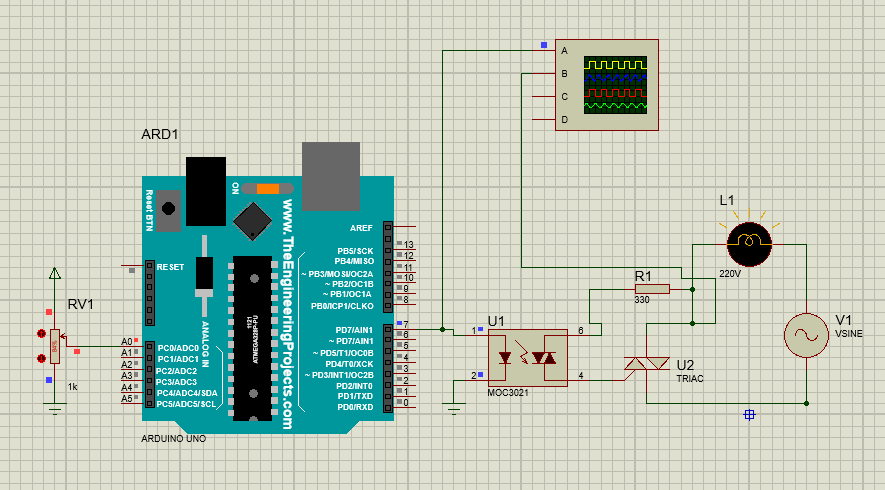
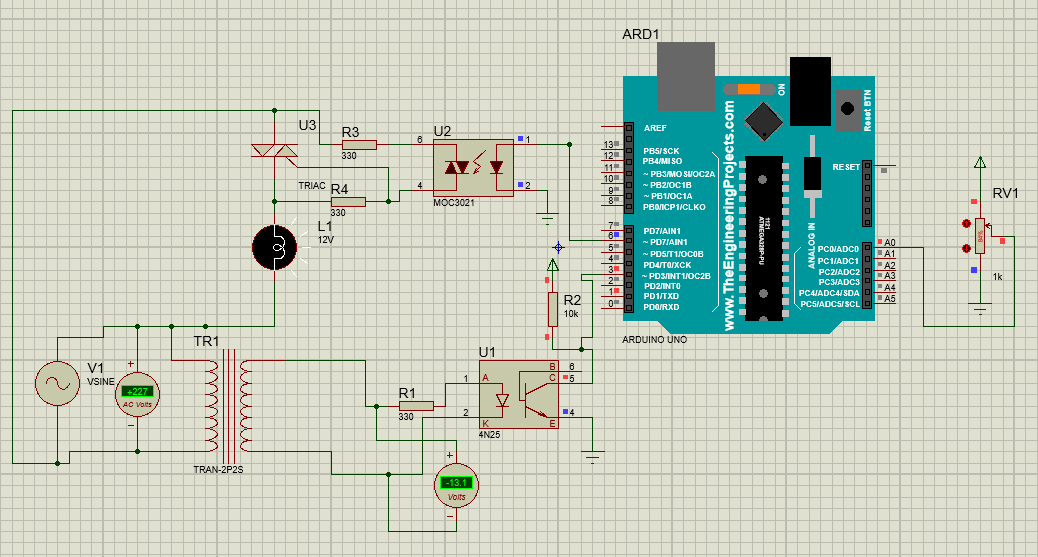


Figure 3: Potentiometer controlled firing angle of TRIAC

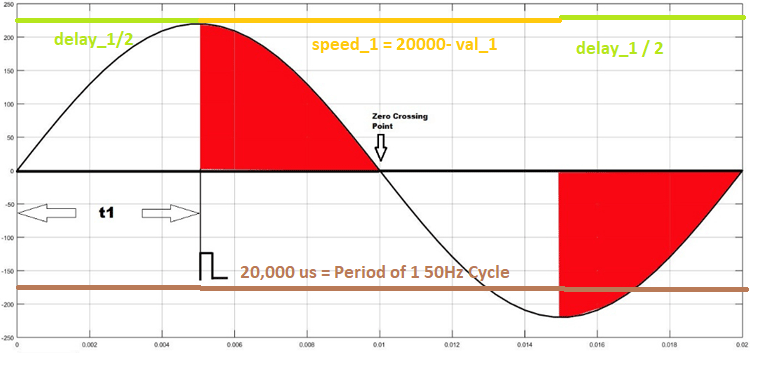
#### Final Circuit:

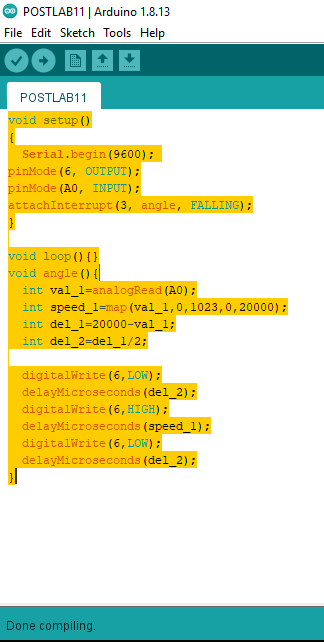
Figure 4: Gate Trigger Pulse Vs. AC switched by TRIAC

Figure 5: Arduino Code for switching potentiometer controlled TRIAC



**ARDUINO IDE CODE:**





|  |
| --- |
| void setup()  {  Serial.begin(9600);  pinMode(6, OUTPUT);  pinMode(A0, INPUT);  attachInterrupt(3, angle, FALLING);  }  void loop(){}  void angle(){  int val\_1=analogRead(A0);  int speed\_1=map(val\_1,0,1023,0,20000);  int del\_1=20000-val\_1;  int del\_2=del\_1/2;  digitalWrite(6,LOW);  delayMicroseconds(del\_2);  digitalWrite(6,HIGH);  delayMicroseconds(speed\_1);  digitalWrite(6,LOW);  delayMicroseconds(del\_2);  } |