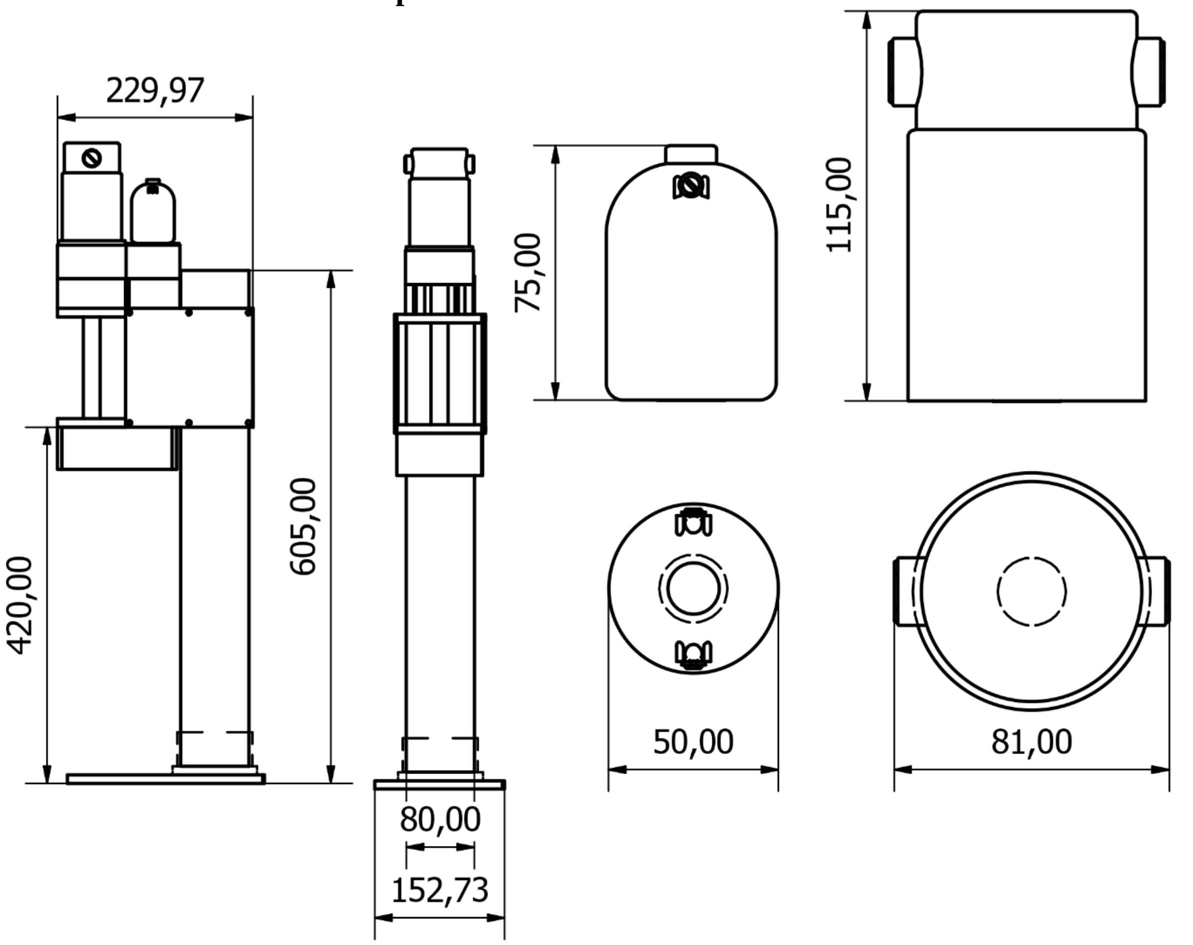
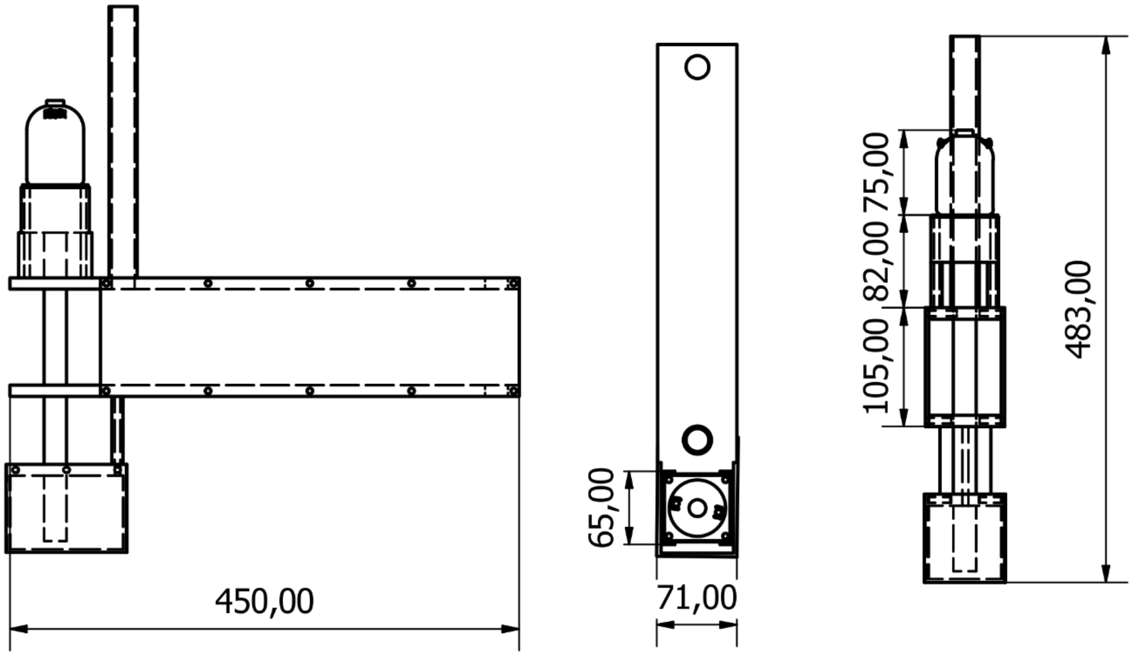
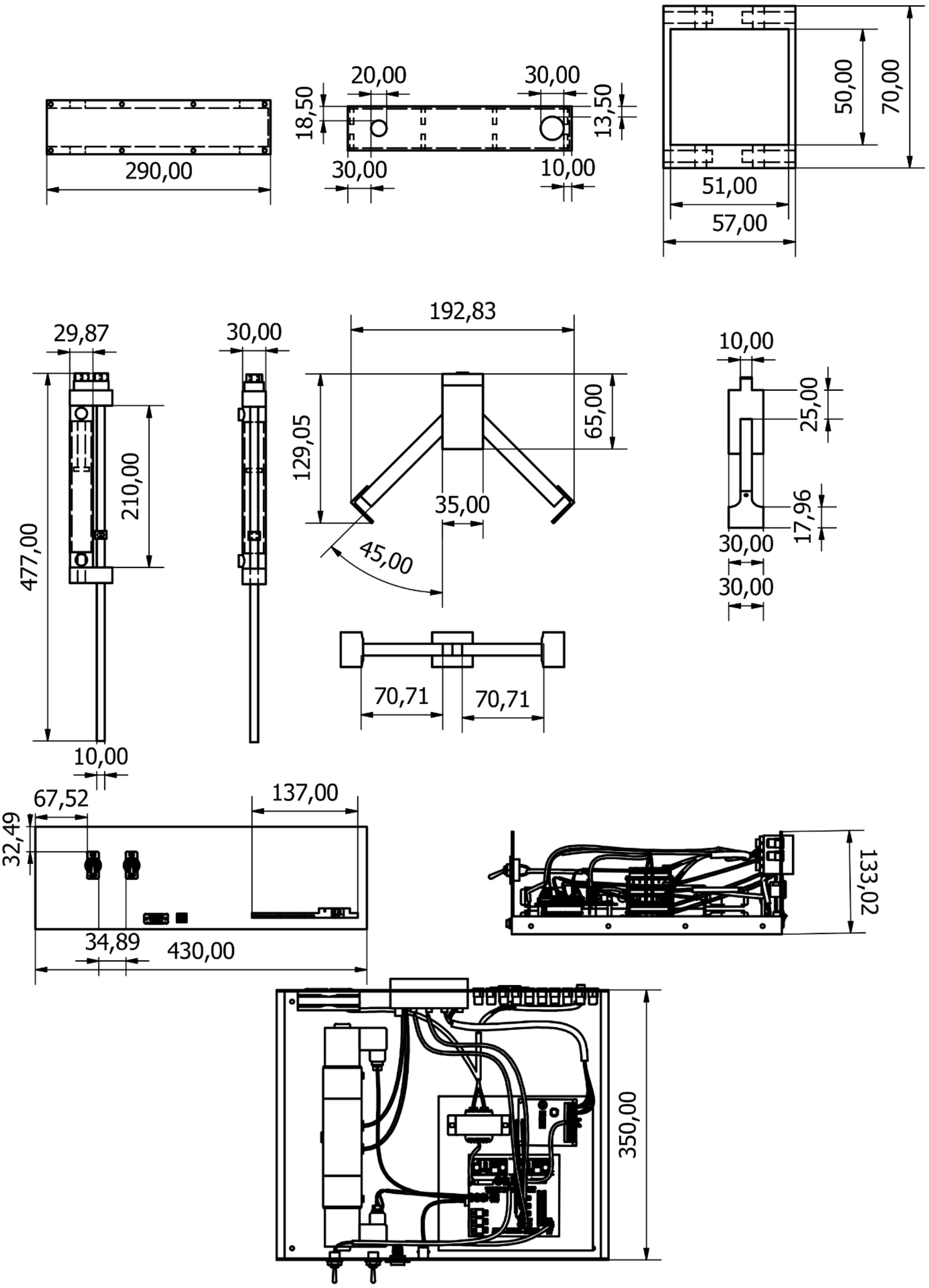
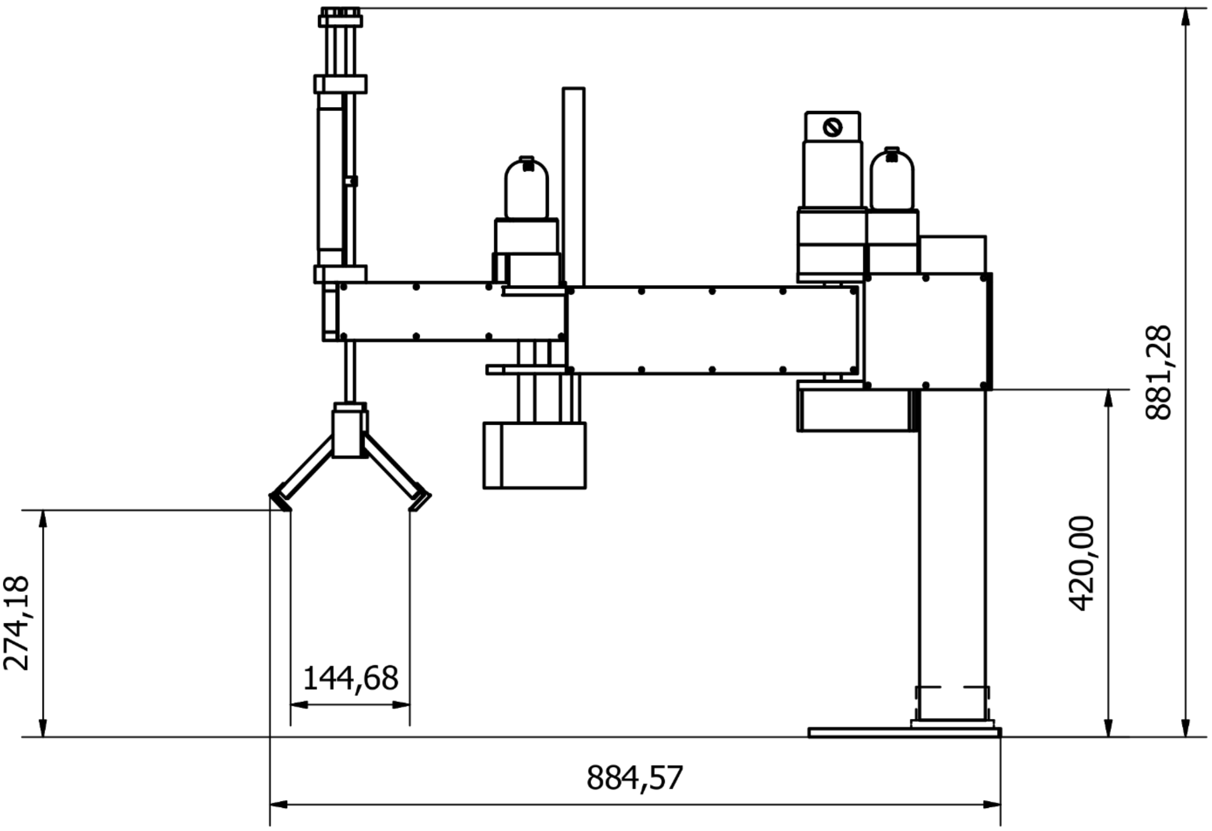
LAMPIRAN

Desain 3D CAD SCARA Serpent






290,00
20,00
30,00
18,50
13,50
30,00
10,00
50,00
70,00
51,00
57,00
29,87
30,00
192,83
10,00
477,00
210,00
129,05
65,00
25,00
35,00
45,00
17,96
30,00
30,00
70,71
70,71
10,00
67,52
137,00
32,49
133,02
34,89
430,00
350,00


881,28
420,00
274,18
144,68
884,57

Program Arduino IDE SCARA Serpent

```
#include <MServo.h>

#include <stdio.h>

#include <math.h>


#define SpotPin  A10 // Pin that connect to Potentiometer

#define SdirAPin 26 // Pin A to control the motor direction

#define SdirBPin  24  // Pin B to control the motor direction

#define SpwmPin  2   // Pin to control the motor speed


#define EpotPin  A9 // Pin that connect to Potentiometer

#define EdirAPin 32  // Pin A to control the motor direction

#define EdirBPin 34 // Pin B to control the motor direction

#define EpwmPin  3  // Pin to control the motor speed


#define WpotPin A8  // Pin that connect to Potentiometer

#define WdirAPin  40  // Pin A to control the motor direction

#define WdirBPin 42 // Pin B to control the motor direction

#define WpwmPin  4  // Pin to control the motor speed


#define p1 10

#define p2 11

#define p3 12


char START_BYTE = '*'; //three characters used for Serial communication

char DELIMITER = ',';

char END_BYTE = '#';


float vps, vpe, vpw, vpp1, vpp2;

int Sremote, Eremote, Wremote, P1remote, P2remote;
int val = 0;
int diff = 1;

unsigned long previousMillis = 0;
float KP, KI, KD, setkp, setki, setkd, KPremote;
float fKP = 2;
float fKI = 2;
float fKD = 2;

MServo myservoS(SpotPin, SdirAPin, SdirBPin, SpwmPin);
MServo myservoE(EpotPin, EdirAPin, EdirBPin, EpwmPin);
MServo myservoW(WpotPin, WdirAPin, WdirBPin, WpwmPin);

MServo remoteS(A15, 50, 51, 52);
MServo remoteE(A14  , 50, 51, 52);
MServo remoteW(A13, 50, 51, 52);
MServo remoteP1(A12, 50, 51, 52);
MServo remoteP2(A11, 50, 51, 52);

void setup() {
  Serial.begin(115200);
  pinMode(p1, OUTPUT);
  pinMode(p2, OUTPUT);
  pinMode(p3, OUTPUT);
  mservo();
}

void loop() {
  remote();
  Read_command();
  KP = setkp / 100.f;
KI = setki / 100.f;
  KD = setkd / 100.f;
  pneumatic();

  myservoS.setParam(KP, KI, KD);
  myservoE.setParam(KP, KI, KD);
  myservoW.setParam(KP, KI, KD);

  myservoS.write(vps);
  myservoE.write(vpe);
  myservoW.write(vpw);

  myservoE.update();
  myservoS.update();
  myservoW.update();
  delay(50);

  Serial.write(START_BYTE); Serial.print(DELIMITER);
  Serial.print(myservoS.getAngle()); Serial.print(DELIMITER);   //1
  Serial.print(myservoE.getAngle()); Serial.print(DELIMITER);   //2
  Serial.print(myservoW.getAngle()); Serial.print(DELIMITER);   //3
  Serial.print(Sremote); Serial.print(DELIMITER);           //4
  Serial.print(Eremote); Serial.print(DELIMITER);             //5
  Serial.print(Wremote); Serial.print(DELIMITER);             //6
  Serial.print(P1remote); Serial.print(DELIMITER);           //7
  Serial.print(P2remote); Serial.print(DELIMITER);             //8
  Serial.write(END_BYTE); Serial.println(); //send a carriage return

}
```

```
import processing.serial.Serial; // serial library
import controlP5.*; // controlP5 library
Serial serial;
ControlP5 cp5;
InverseKinematic ik1;
PFont font9, font10, font12, font14, font18, font20, font25, font30, font35;
Chart current_chart, respon_chart;
color yellow_ = color(200, 200, 20), green_ = color(46, 209, 2), red_ = color(120, 30, 30), blue_ = color (0, 102, 200);
color white_ = color(255, 255, 255), black_ = color(0, 0, 0), pink_ = color(255, 0, 255);
//UART Variable
int serial_conect = 0;
int commListMax;
int[] data = null;

Textlabel txtlblWhichcom;
ListBox commListbox;
ListBox portlist;

// coded by Eberhard Rensch
// Truncates a long port name for better (readable) display in the GUI
String shortifyPortName(String portName, int maxlen)
{
  String shortName = portName;
  if (shortName.startsWith("/dev/")) shortName = shortName.substring(5);
  if (shortName.startsWith("tty.")) shortName = shortName.substring(4); // get rid off leading tty. part of device name
  if (portName.length()>maxlen) shortName = shortName.substring(0, (maxlen-1)/2) + "~" +shortName.substring(shortName.length()-(maxlen-(maxlen-1)/2));
  if (shortName.startsWith("cu.")) shortName = "";// only collect the corresponding tty. devices
  return shortName;
}
```

Program Processing IDE SCARA Serpent

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  return shortName;

}
```

```
boolean START = false;
boolean MODE = false;
boolean ik = true;
boolean P1 = false;
boolean P2 = false;
int KoordinatX, KoordinatY;
int KoordinatX_, KoordinatY_;
float fs, fe, fw, rs, re, rw, rp1, rp2;
int ps=380;
int pe=280;
float beta, gamma;
int Ibeta, Igamma;
int cb1, cb2;
float cb3;
int mosxe, mosye, mosex, mosey;
String textValue = "";
float KP;
float KI;
float KD;
int _KoordinatX, _KoordinatY;
int mosx, mosy;
int s=5;
//revision v1
int count_click = 0;
int[] clickX = new int[100];
int[] clickY = new int[100];

int X_rev = 50;
int Y_rev = 120;
int statustab=1;
int[] X_odometry = new int[5];
int[] Y_odometry = new int[5];
int[][] color_point = new int[6][3];
float[][] coordinat_input= new float[6][2];
int []fxcoordinat=new int[100];
int []fycoordinat=new int[100];
void setup()
{
  for (int a=0; a<100; a++) {
    colorR[a] = random(255);
    colorG[a] = random(255);
    colorB[a] = random(255);
  }
  size(1374, 750, OPENGL);     //ukuran window
  image_();

  cp5 = new ControlP5(this);
  ik1 = new InverseKinematic(ps, pe);
  font9 = createFont("Arial Bold", 9, false);
  font10 = createFont("Arial Bold", 10, false);
  font12 = createFont("Arial Bold", 12, false);
  font14 = createFont("Arial Bold", 14, false);
  font18 = createFont("Arial Bold", 18, false);
  font20 = createFont("Arial Bold", 20, false);
  font25 = createFont("Arial Bold", 25, false);
  font30 = createFont("Arial Bold", 30, false);
  font35 = createFont("Arial Bold", 35, false);
  GUI_setup();
  setup_UART();
  sobj();
}
```

```
float v22=0.0;
int v33, v44;
void draw()
{cp5.getController("RESET_KOORDINAT").moveTo("fiture");
cp5.getController("RUN").moveTo("fiture");
cp5.getController("v22").moveTo("fiture");
cp5.getController("v33").moveTo("fiture");
cp5.getController("v44").moveTo("fiture");
//println(mouseX, mouseY);
if (statustab==1) //TAB MAIN
 {
  background(bg);
 obj();
 images();
 fw();
 Send_To_Arduino();
 }
 if (statustab==2) //TAB CHART
 {
  background(bg); //0-->Black
     fw();
   fill(255);
   imageMode(CENTER);
   pushMatrix();
   scale(0.45);
  image(workspace, 1187, 948);
popMatrix();
 image(judul, width/2, 45);
 draw_coordinat_target();
  draw_coordinat();
```

```
    fiture_();
    pushMatrix();
    translate(width/8,0,0);
//   obj1();
   popMatrix();
//     Send_To_Arduino();
  }
  //print(mouseX); print("\t"); println(mouseY);

}

public void setkp(String theText) {

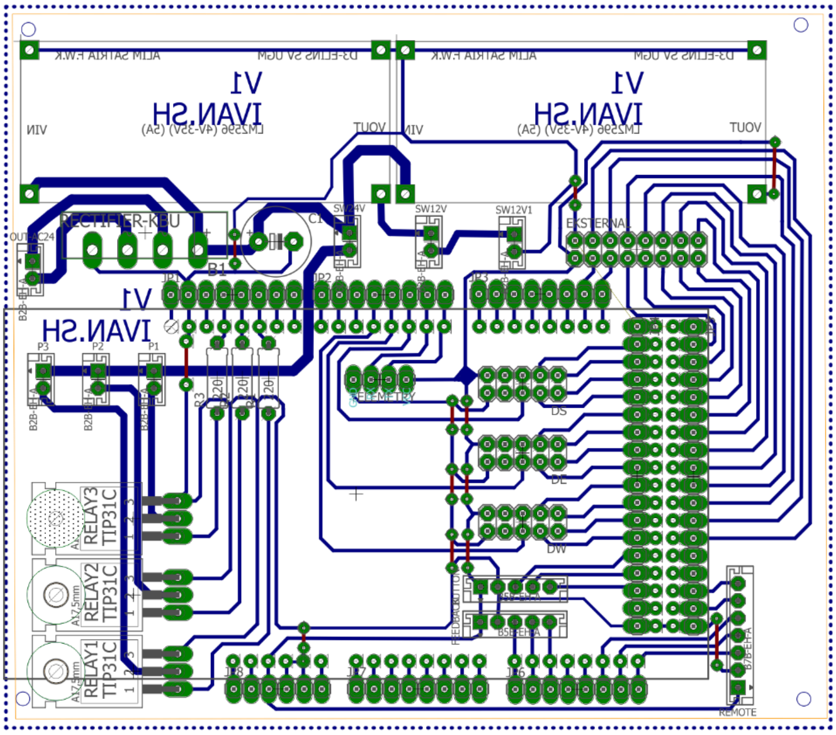
  KP= float(theText)*100;//5
  print(KP);
}

public void setki(String theText) {

  KI= float(theText)*100;//0.001
   print(KI);
}
public void setkd(String theText) {
  KD= float(theText)*100;//10
   println(KD);
}

public void KoordinatX(String Xkoor) {
  _KoordinatX= int(Xkoor);
}
public void KoordinatY(String Ykoor) {
```

Desain Eagle SCARA Serpent



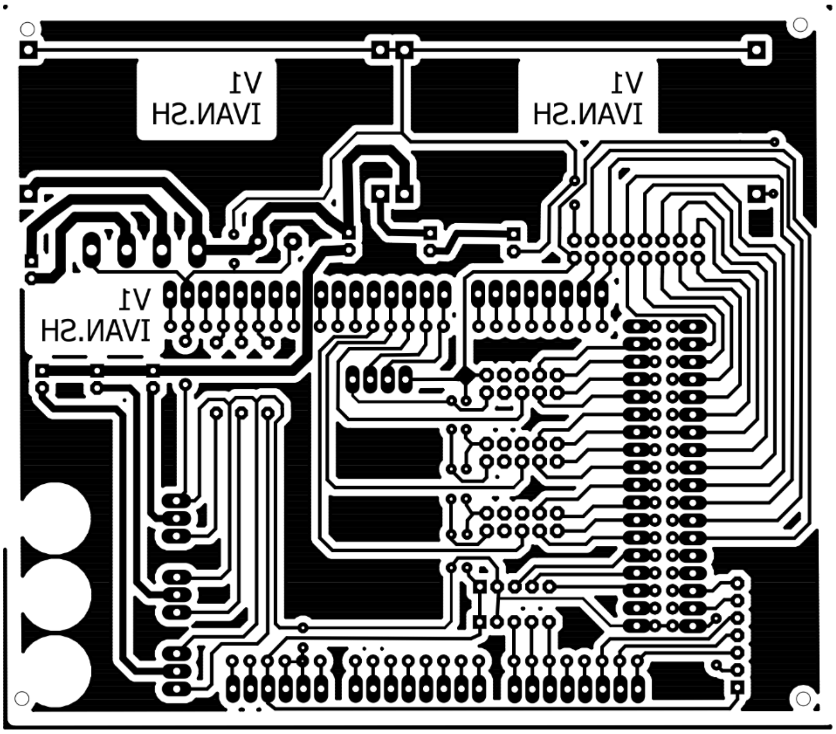


Foto SCARA Serpent