```arduino
 // Pin definitions
# define Hall sensor 2        //  Pino digital 2

// Constants definitions
const float pi = 3.14159265;          // Numero pi
int period = 5000;               // Tempo de medida(miliseconds)
int delaytime = 2000;              // Time between samples (miliseconds)
int radius = 105;      // Aqui ajusta o raio do anemometro em milimetros  **************

// Variable definitions
unsigned int Sample = 0;   // Sample number
unsigned int counter = 0; // magnet counter for sensor
unsigned int RPM = 0;         // Revolutions per minute
float speedwind = 0;         // Wind speed (m/s)
float windspeed = 0;          // Wind speed (km/h)

//dir
int ar =0;
int wd=0;
int wds=0;



void setup()
{
  // Set the pins
  pinMode(2, INPUT);
  digitalWrite(2, HIGH);     //internall pull-up active

  //Start serial
  Serial.begin(9600);      // sets the serial port to 9600 baud
  }

void loop()
{
  Sample++;
  Serial.print(Sample);
  Serial.print(": Start measurement...");
  windvelocity();
  Serial.println("   finished.");
  Serial.print("Counter: ");
  Serial.print(counter);
  Serial.print(";  RPM: ");
  RPMcalc();
  Serial.print(RPM);
  Serial.print(";  Wind speed: ");

//**************************************************************
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```arduino
//print m/s
  WindSpeed();
  Serial.print(windspeed);
  Serial.print(" [m/s] ");

//*************************************************************
//print km/h
  SpeedWind();
  Serial.print(speedwind);
  Serial.print(" [km/h] ");
  Serial.println();


  delay(delaytime);                  //delay between prints

  //****************************
  //Direção
  winddir();

}



// Measure wind speed
void windvelocity(){
  speedwind = 0;
  windspeed = 0;

  counter = 0;
  attachInterrupt(0, addcount, RISING);
  unsigned long millis();
  long startTime = millis();
  while(millis() < startTime + period) {
  }
}


void RPMcalc(){
  RPM=((counter)*60)/(period/1000);  // Calculate revolutions per minute (RPM)
}

void WindSpeed(){
  windspeed = ((4 * pi * radius * RPM)/60) / 1000;  // Calculate wind speed on m/s

}

void SpeedWind(){
  speedwind = (((4 * pi * radius * RPM)/60) / 1000)*3.6;  // Calculate wind speed on km/h
```

```
}

void addcount(){
  counter++;
}


void winddir(){
 for (int i = 0; i < 20; i++) {
    wd = analogRead(0); //34 esp ou A0 arduino
    Serial.println(wd);
    wds=wds+wd;
    delay(50);
    }

    ar = wds / 20;

    int wdir;

    if(ar >= 0 && ar <=64 )  {
     wdir = 315;
     }
    if (ar >= 65  && ar <= 100) {
     wdir = 270;
     }
    if (ar >= 101  && ar <=200) {
     wdir = 225;
     }
    if (ar >= 201 && ar <= 300) {
     wdir = 180;
     }
    if (ar >= 301 && ar <= 400){
     wdir = 135;
     }
    if (ar >= 401 && ar <= 480) {
     wdir = 90;
     }
    if (ar >= 481 && ar <= 580) {
     wdir = 45;
     }
    if (ar >= 581 && ar <= 699 ) {
     wdir= 0;
     }


  Serial.print("Leitura Analog Media : ");
  Serial.print(ar);
```

```
Serial.print(" - Direção : ");
Serial.println(wdir);

delay(1000);

ar=0;
wd=0;
wds=0;


}
```