

Arbeitsblatt 6

analogRead() Seite 44 / 45

Liest den angegebenen Analogeingang aus. Wandelt die Spannung 0 bis 5 V in Zahlen von 0 bis 1023 um (10 Bit)

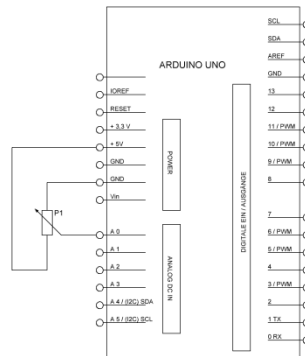
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Wandelt eine Zahl von einem Wertebereich in einem anderen um.

Programm 1 analogRead auf Seriellen Monitor 0 – 123

```
int eingang= A0;
int sensorwert = 0;

void setup()
{
  Serial.begin(9600);
}
void loop(){
  sensorwert =analogRead(eingang);
  Serial.println(sensorwert);
}
```

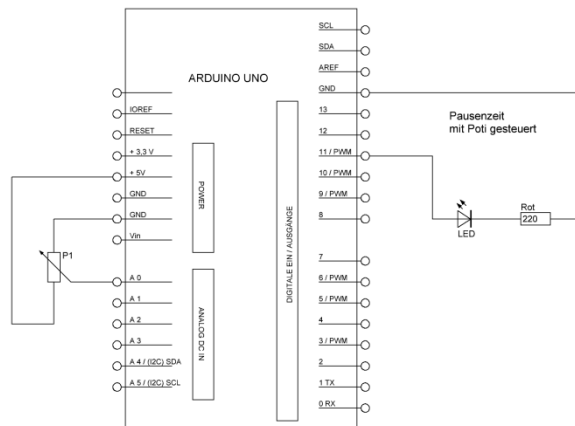


Programm 2 Ansteuerung Pausenzeit LED

```
int eingang= A0;
int LED = 11;
int sensorwert = 0;

void setup()
{
  Serial.begin(9600);
  pinMode (LED, OUTPUT);
}

void loop()
{
  sensorwert =analogRead(eingang);
  digitalWrite (LED, HIGH);
  delay (sensorwert);
  digitalWrite (LED, LOW);
  delay (sensorwert);
  Serial.println(sensorwert);
}
```



Programm 3 Ansteuerung PWM LED 0 – 1023 / 0 – 254 berechnet

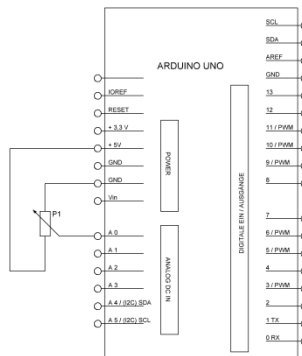
```

int sensorwert = 0;
int PWM = 0;

void setup()
{
  Serial.begin(9600);
  pinMode (LED, OUTPUT);
}

void loop()
{
  sensorwert =analogRead(eingang);
  PWM = sensorwert/4;
  analogWrite(LED, PWM);
  Serial.print("Sensorwert ");
  Serial.print(sensorwert);
  Serial.print(" Pulsweite ");
  Serial.println(PWM);
  delay(100);
}

```



Programm 4 PWM LED mit Map Befehl

```

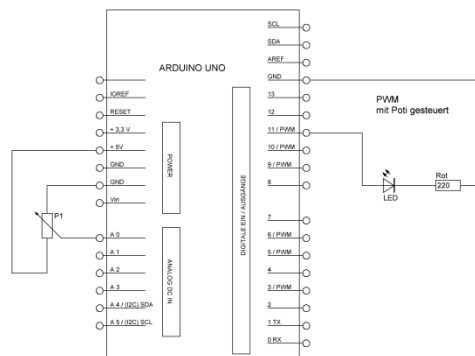
int eingang= A0;
int LED = 11;
int sensorwert = 0;
int PWM = 0;
int Widerstand = 0;

void setup()
{
  Serial.begin(9600);
  pinMode (LED, OUTPUT);
}

void loop()
{
  sensorwert =analogRead(eingang);
  PWM = map(sensorwert, 0, 1023, 0, 255);
  Widerstand = map(sensorwert, 0, 1023, 0, 1000);

  analogWrite(LED, PWM);
  Serial.print("Sensorwert ");
  Serial.print(sensorwert);
  Serial.print(" Pulsweite ");
  Serial.print(PWM);
  Serial.print(" Widerstand in Ohm ");
  Serial.println(Widerstand);
  delay(100);
}

```



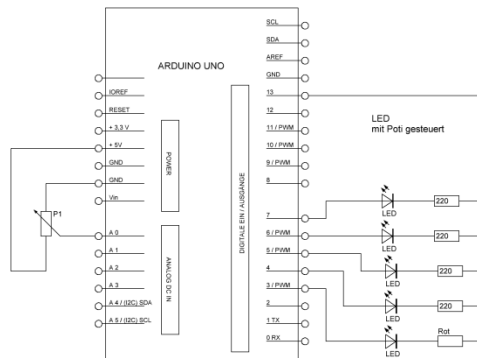
```
}
```

Programm 5 for schleife

```
int eingang= A0;  
int LED1 = 3;  
int LED2 = 4;  
int LED3 = 5;  
int LED4 = 6;  
int LED5 = 7;  
int sensorwert = 0;
```

```
void setup()  
{  
  Serial.begin(9600);  
  pinMode (LED1, OUTPUT);  
  pinMode (LED2, OUTPUT);  
  pinMode (LED3, OUTPUT);  
  pinMode (LED4, OUTPUT);  
  pinMode (LED5, OUTPUT);  
}
```

```
void loop()  
{  
  sensorwert =analogRead(eingang);  
  
  if(sensorwert > 0 && sensorwert < 10)  
  {  
    digitalWrite (LED1,LOW);  
    digitalWrite (LED2,LOW);  
    digitalWrite (LED3,LOW);  
    digitalWrite (LED4,LOW);  
    digitalWrite (LED5,LOW);  
  }  
  else if (sensorwert > 10 && sensorwert < 200)  
  {  
    digitalWrite (LED1,HIGH);  
    digitalWrite (LED2,LOW);  
    digitalWrite (LED3,LOW);  
    digitalWrite (LED4,LOW);  
    digitalWrite (LED5,LOW);  
  }  
  else if (sensorwert > 201 && sensorwert < 400)  
  {  
    digitalWrite (LED1,HIGH);  
    digitalWrite (LED2,HIGH);  
    digitalWrite (LED3,LOW);  
    digitalWrite (LED4,LOW);  
    digitalWrite (LED5,LOW);  
  }  
  else if (sensorwert > 401 && sensorwert < 600)
```



```
{
  digitalWrite (LED1,HIGH);
  digitalWrite (LED2,HIGH);
  digitalWrite (LED3,HIGH);
  digitalWrite (LED4,LOW);
  digitalWrite (LED5,LOW);
}
else if (sensorwert > 601 && sensorwert < 800)
{
  digitalWrite (LED1,HIGH);
  digitalWrite (LED2,HIGH);
  digitalWrite (LED3,HIGH);
  digitalWrite (LED4,HIGH);
  digitalWrite (LED5,LOW);
}
else
{
  digitalWrite (LED1,HIGH);
  digitalWrite (LED2,HIGH);
  digitalWrite (LED3,HIGH);
  digitalWrite (LED4,HIGH);
  digitalWrite (LED5,HIGH);
}

Serial.print("Sensorwert ");
Serial.println(sensorwert);

delay(100);
}
```