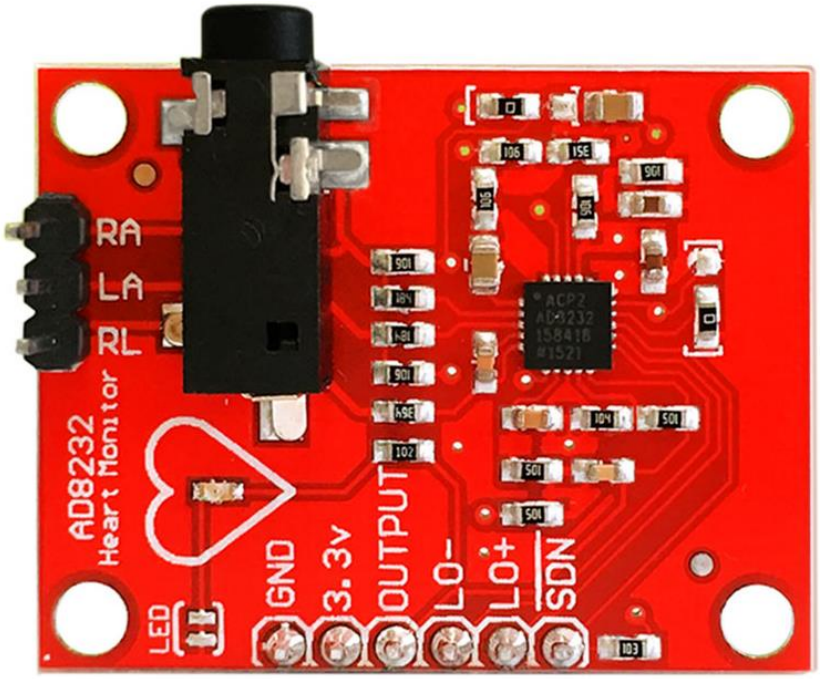
RBS12601 Keyes AD8232 EKG Sensor Modul

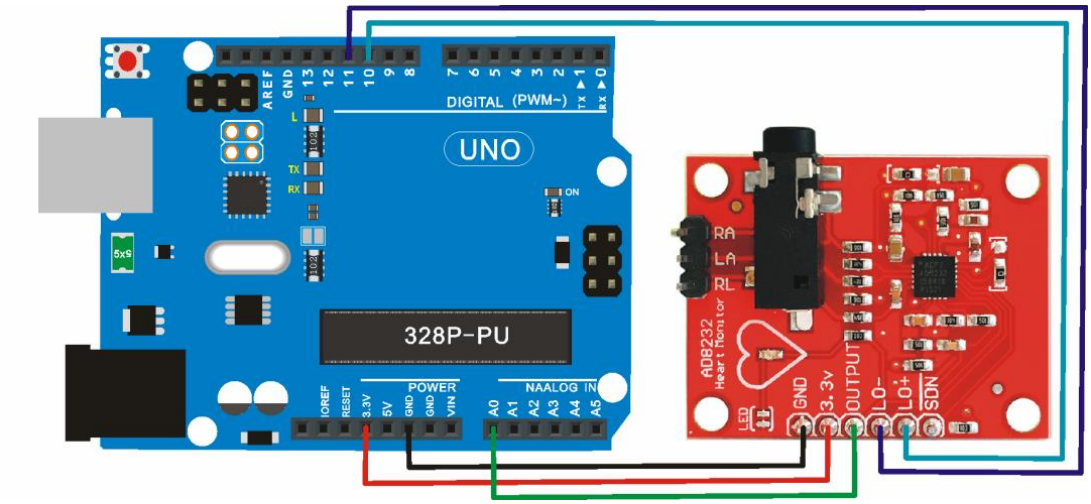


Inhaltsverzeichnis

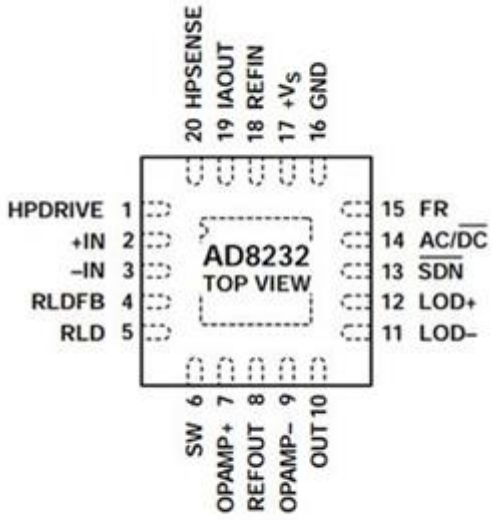
Technische Daten

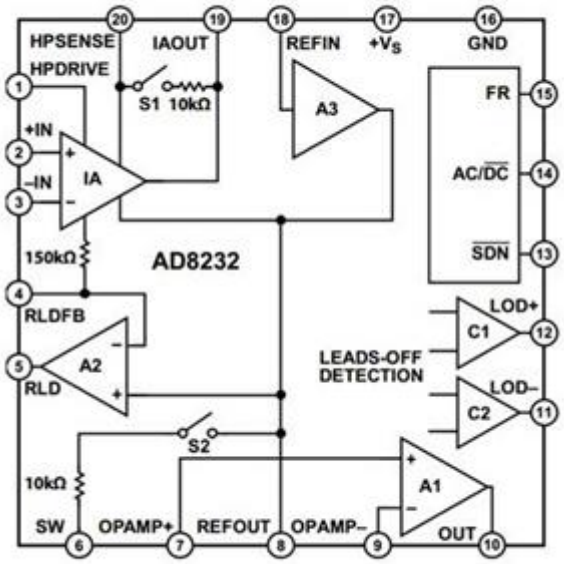
- Versorgungsspannung: DC 3.3V
- Output: Analog Output
- Output Schnittstelle: 2.54 pin or headphone jack
- Abmessungen: 36mm * 31mm * 18mm
- Betriebstemperatur: -40 Grad Celsius bis +85 Grad Celsius

Anschluss an einen Arduino UNO



Schaltplan





Erstes Testprogramm

1. **Das folgende Programm auf den Arduino UNO flashen**

```
void setup() {
  // initialize the serial communication:
  Serial.begin(9600);
  pinMode(10, INPUT); // Setup for leads off detection LO +
  pinMode(11, INPUT); // Setup for leads off detection LO -

}

void loop() {

  if((digitalRead(10) == 1)||(digitalRead(11) == 1)){
    Serial.println('!');
  }
  else{
    // send the value of analog input 0:
      Serial.println(analogRead(A0));
  }
  //Wait for a bit to keep serial data from saturating
  delay(1);
}
```

2. **Die Processing Software starten und das Programm einfügen:**

```
/*************************************************************************
****
```

Heart_Rate_Display.ino

Demo Program for AD8232 Heart Rate sensor.

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6/27/2014

https://github.com/sparkfun/AD8232_Heart_Rate_Monitor

The AD8232 Heart Rate sensor is a low cost EKG/ECG sensor. This example shows

how to create an ECG with real time display. The display is using Processing.

This sketch is based heavily on the Graphing Tutorial provided in the Arduino

IDE. http://www.arduino.cc/en/Tutorial/Graph

Resources:

This program requires a Processing sketch to view the data in real time.

Development environment specifics:

IDE: Arduino 1.0.5

Hardware Platform: Arduino Pro 3.3V/8MHz

AD8232 Heart Monitor Version: 1.0

This code is beerware. If you see me (or any other SparkFun employee) at the

local pub, and you've found our code helpful, please buy us a round!

Distributed as-is; no warranty is given.

**********/

```
import processing.serial.*;

Serial myPort;        // The serial port
int xPos = 1;         // horizontal position of the graph
float height_old = 0;
float height_new = 0;
float inByte = 0;


void setup () {
  // set the window size:
  size(1000, 400);

  // List all the available serial ports
  println(Serial.list());
  // Open whatever port is the one you're using.
  myPort = new Serial(this, Serial.list()[2], 9600);
  // don't generate a serialEvent() unless you get a newline character:
  myPort.bufferUntil('\n');
  // set inital background:
  background(0xff);
}


void draw () {
  // everything happens in the serialEvent()
}
```

```
void serialEvent (Serial myPort) {
  // get the ASCII string:
  String inString = myPort.readStringUntil('\n');

  if (inString != null) {
    // trim off any whitespace:
    inString = trim(inString);

    // If leads off detection is true notify with blue line
    if (inString.equals("!")) {
      stroke(0, 0, 0xff); //Set stroke to blue ( R, G, B)
      inByte = 512;  // middle of the ADC range (Flat Line)
    }
    // If the data is good let it through
    else {
      stroke(0xff, 0, 0); //Set stroke to red ( R, G, B)
      inByte = float(inString);
     }

     //Map and draw the line for new data point
     inByte = map(inByte, 0, 1023, 0, height);
     height_new = height - inByte;
     line(xPos - 1, height_old, xPos, height_new);
     height_old = height_new;

      // at the edge of the screen, go back to the beginning:
      if (xPos >= width) {
        xPos = 0;
        background(0xff);
```

```
      }
      else {
        // increment the horizontal position:
        xPos++;
      }
  }
}
```

3. COM-Port in Processing ändern.

```
myPort = new Serial(this, Serial.list()[2], 9600);
```

In diesem Programmabschnitt den COM-Port des Arduinos am PC einsetzen
`Serial.list()[2],9600`

Den korrekten COM-Port können Sie im Geräte-Manager nachlesen.

4. Experiment durchführen

Platzieren den Patch „R“ links an der Brust, den Patch „L“ rechts an der Brust und den Patch „COM“ am Bauch. Nun sollten die LEDs am Modul im Herzschlag pulsieren und die Ausgabe am PC die Herzfrequenz in Wellenform darstellen:

Somit ist die Funktion des Boards sichergestellt und Sie können mit Ihren Experimenten durchstarten.