Wiring the mp6-OEM to the Arduino UNO

1	GND	VDD	14
2	CLOCK	/SHUTDOWN	13
3	CLOCK_INT	SLEWRATE	12
4	AMPLITUDE	SLEW_INT	11
5	GND2	GND3	10
6	P1+	P2+	9
7	P1-	P2-	8

MP6A-OEM

Digital-
Analog-
Converter
(MCP4811)

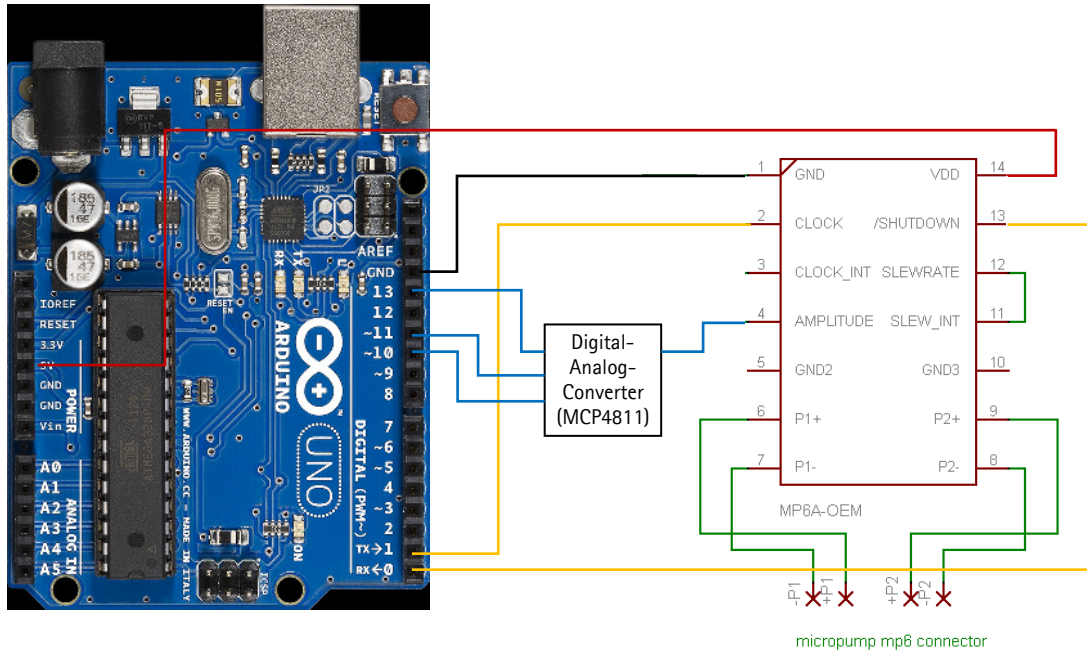micropump mp6 connector

Demo Arduino Sketch

```
1   #include <SPI.h>
2   char buffer[18];
3   int amplitude=700;
4   #define DAC_SELECT 10      //slave select pin of DAC
5   #define OEM_SHUTDOWN 0
6   #define OEM_CLOCK  1
7
8   void setDAC(int value);
9
10  void setup() {
11   Serial.begin(9600);
12   Serial.println("Arduino mp6 controller");
13   Serial.println("Bartels Mikrotechnik GmbH");
14   Serial.println();
15   Serial.flush();
16   SPI.begin();
17   SPI.setBitOrder(MSBFIRST);
18   SPI.setClockDivider(SPI_CLOCK_DIV2);
19   SPI.setDataMode(SPI_MODE3);
20   pinMode(DAC_SELECT, OUTPUT);
21   pinMode(OEM_CLOCK, OUTPUT);
22   digitalWrite(OEM_CLOCK, LOW);
23   pinMode(OEM_SHUTDOWN, OUTPUT);
24   digitalWrite(OEM_SHUTDOWN, LOW);
25   setDAC(amplitude);
26  }
27
28  void loop() {
29   if (Serial.available()>0) {
30    int index=0;
31    delay(100);
32    int numChar=Serial.available();
33    if (numChar>15){
34     numChar=15;
35    }
36    while (numChar--) {
37     buffer[index++]=Serial.read();
38    }
39    splitString(buffer);
40   }
41  /*High dutycycle PWM is needed for frequencies below 5 Hz
42  The CLOCK pin of the OEM need 4 times the frequency to be
43  generated. In this case T=250ms ; f = 4Hz ; pumpfrequency =
44  1Hz*/
45   digitalWrite(OEM_CLOCK,HIGH);
46   delay(245);
47   digitalWrite(OEM_CLOCK,LOW);
48   delay(5);
49  }
50
51  void splitString(char*data) {
52   char*parameter;
53   parameter=strtok(data,",");
54   parameter=data;
55   while(parameter!=NULL) {
56    parameter=strtok (NULL, ",");
57    amplitude=strtol(data, NULL, 10);
58    if (amplitude==0) {
59     amplitude=0;
60     setDAC(0);
61     digitalWrite(OEM_SHUTDOWN, LOW);
    } else {
62     //values below 120 tend to shut down the mp6-OEM
63     amplitude=constrain(amplitude,120,700);
64     setDAC(amplitude);
65     digitalWrite(OEM_SHUTDOWN, HIGH);
66    }
67    Serial.print("New value=");
68    Serial.println(amplitude);
69   }
70   for (int x=0;x<16;x++) { //empty buffer
71    buffer[x]='\0';
72   }
73   Serial.flush();
74  }
75
76  void setDAC(int value) {
77   digitalWrite(DAC_SELECT, LOW);
78   SPI.transfer((value>>6)|0b00110000);
79   SPI.transfer(value<<2);
80   digitalWrite(DAC_SELECT, HIGH);
81  }
82
83
84
```