Connecting MIDI instrument to Arduino

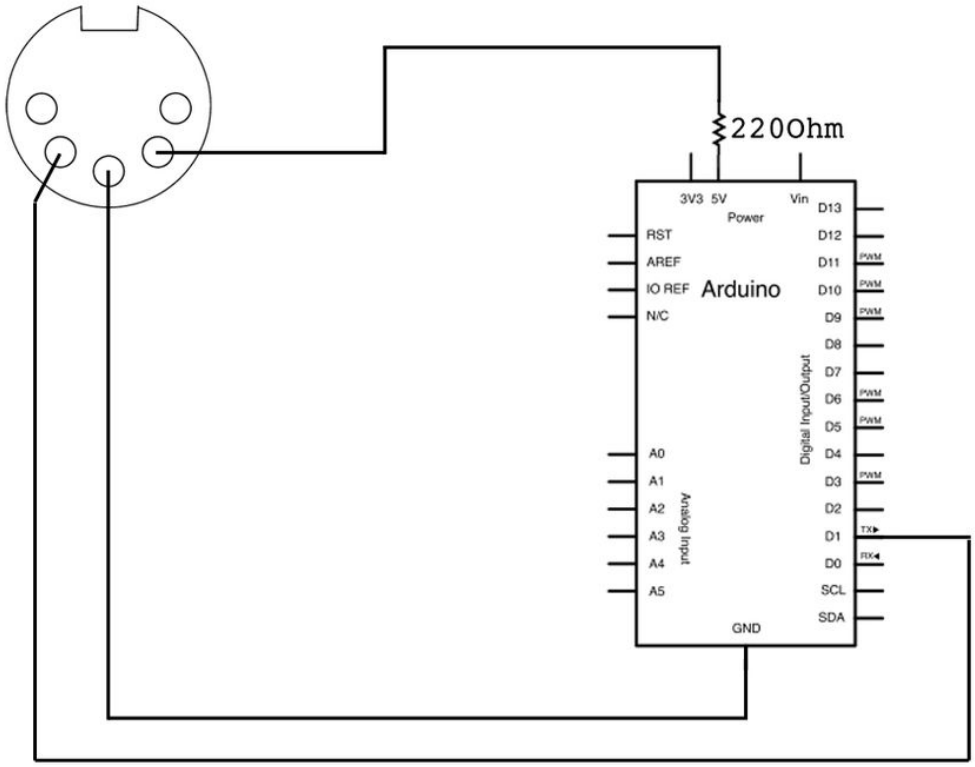


Figure 1: MIDI input - Arduino interface schematic

MIDI keyboard schematic – MIDI connector to Arduino

MIDI pin 4 via 220 Ohm to 5V

MIDI pin 2 to ground

MIDI pin 5 to Arduino serial input pin

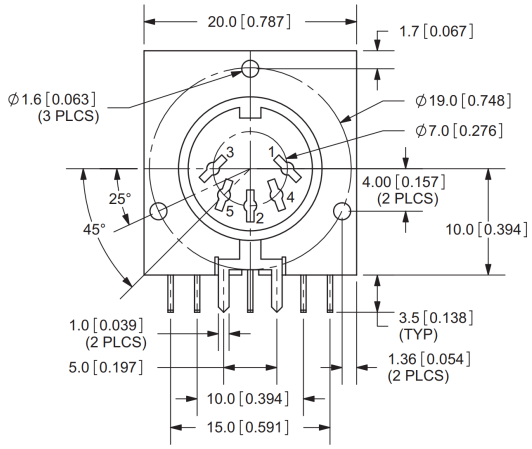


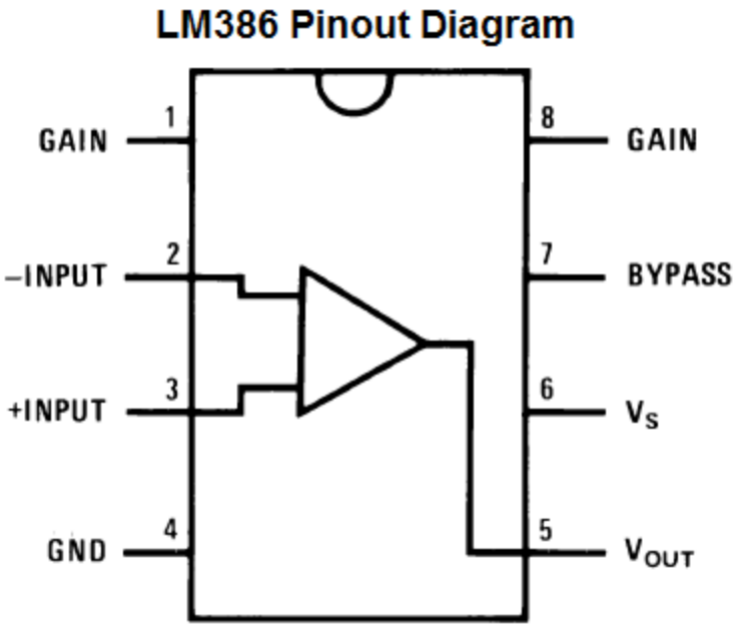
Figure 2: CUI Inc. SDS-50J MIDI connector schematic

Connecting condenser microphone to Arduino

1. Components required

- A Condenser Microphone
- 6 Volts of power (either from 4 'AA' batteries or a DC power supply)
- 2KΩ-6KΩ resistor (depending on the microphone in use)
- 10Ω resistor
- 10KΩ potentiometer
- 2 10µF electrolytic capacitor
- 100µF electrolytic capacitor
- 0.1µF ceramic capacitor
- 47nF ceramic capacitor
- Arduino
- LED
- LM386 audio amplifier chip

2. LM386 pinout



Terminals 1 and 8 represent the gain control of the amplifier. These are the terminals where you can adjust the gain by placing a resistor and capacitor or just capacitor between these terminals. In this circuit, we will place a 10µF capacitor between these terminals for the highest voltage gain. You can adjust this as necessary to adjust the gain, as needed.

Terminals 2 and 3 are the sound input signal terminals. These are the terminals where you place the sound which you want to amplify. In our case for this circuit, the condenser microphone will be connected to these terminals. Terminal 2 is the -input and Terminal 3 is the +input. In our circuit, the positive microphone terminal will be placed on terminal 3 and terminal 2 will be connected to the negative microphone terminal, tied to ground.

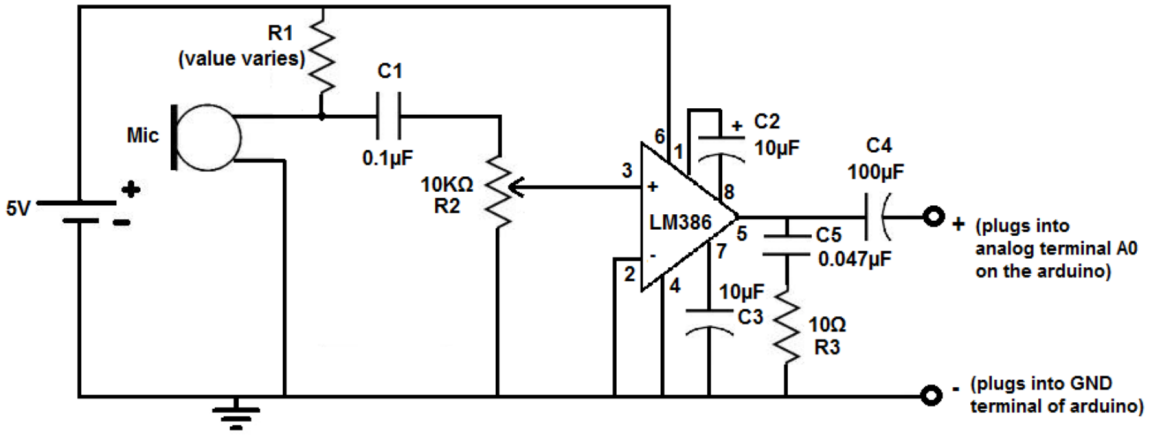
Terminal 4 is GND (ground). This is where the negative voltage of the power source connects to.

Terminal 5 is the output of the amplifier. This is the terminal in which the amplified sound signal comes out.

Terminal 6 is the terminal which receives the positive DC voltage so that the op amp can receive the power it needs to amplify signals.

Terminal 7 is the Bypass terminal. This pin is usually left open or is wired to ground. However, for better stability, a capacitor is added in our circuit because this can prevent oscillations in the amp chip.

3. Microphone amplifier circuit



Alternatively, an integrated audio receiving and amplifying circuit can also be connected to the Arduino in the same way.

https://media.digikey.com/pdf/Data%20Sheets/CUI%20Inc%20All%20Brands%20PDFs/SDS-J.pdf

https://www.digikey.com/product-detail/en/SDS-50J/CP-2350-ND/97033