

Specifications

Sound reactive laser projector

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Goals :

We decided to make a visual ambience equipment that is intended to be used during parties. Lasers are an integral part of big parties, but the systems found on the market are extremely expensive even if they are very successful. Our goal is to create a system as close as possible to commercial versions but much cheaper.

Main requirements :

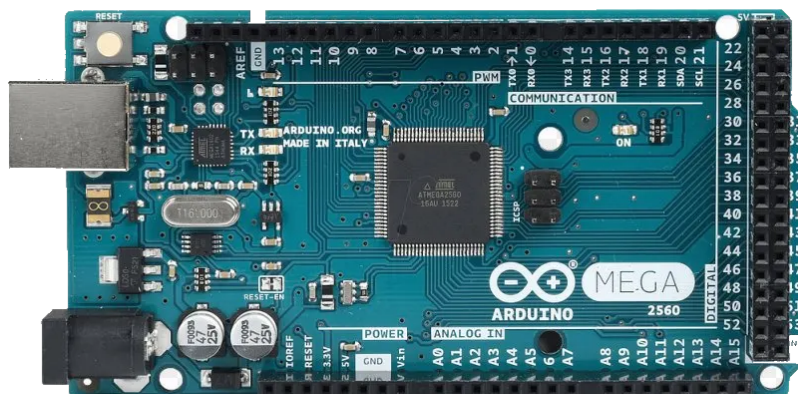
- The system must work with an Arduino.
- Lasers must be the main elements of the system.
- Laser's power mustn't be dangerous for eyes.
- The system must react to the sound of the external environment.
- The system must be able to represent simple shapes like circle, square etc...

Not mandatory requirements :

- The system mustn't be too cumbersome.
- The system must use different colored lasers (red, green, blue).
- The system must be able to represent more or less complicated shapes.
- The system must contain a strobe light.
- The system has several reaction modes.

Section 1 - Board

The board used for this project is an Arduino Mega 2560 because it has many inputs that will be needed to connect all the components.



Section 2 - Laser(s)

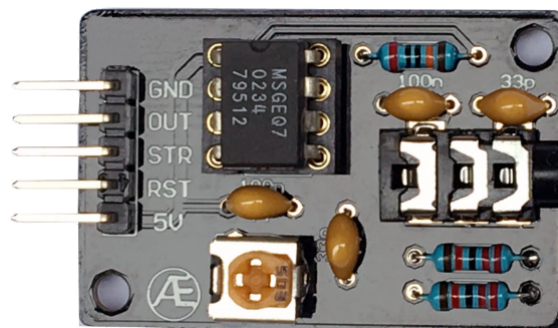
We will use class 2 or 3 lasers with a power lower than 5 mW, so there will be no danger as long as there is no long exposure of the eyes to the device.

Section 3 - Reaction to sound

3.1 - Get the external sound

One of the technical solutions to this need would be the use of a microphone to capture the sound and to react simply according to the sound level. But the ambition of the project is higher and this solution would create a certain latency between the music and the light in addition to the fact that we could not make the system react to the different frequencies of the music which is a shame.

That's why we decided to use an audio processing module allowing to transform a sound signal into an amplitude of different frequency and receiving the signal instantly thanks to a jack cable. This module is the MSGEQ7, it divides the signal into 7 frequencies ranging from 63 Hz to 16 kHz and works in 5V.



3.2 - Reacting to the sound obtained

In progress...