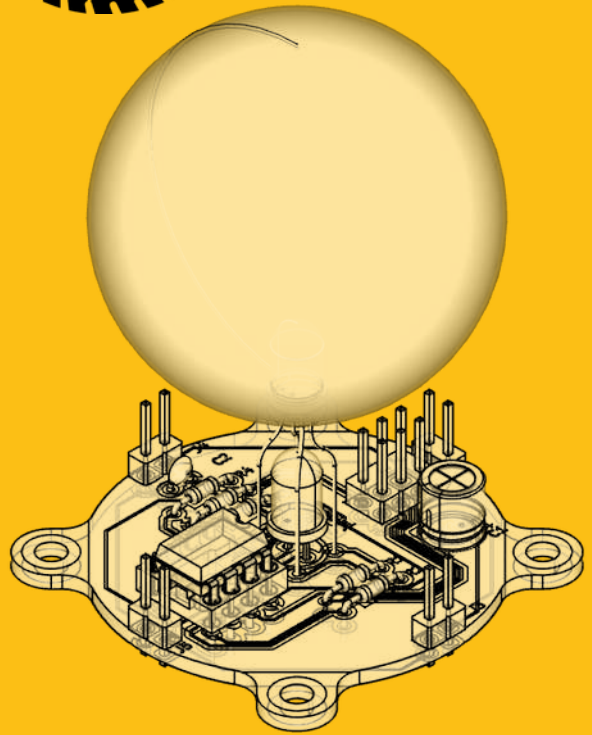
MAKER'S™ ASYLUM



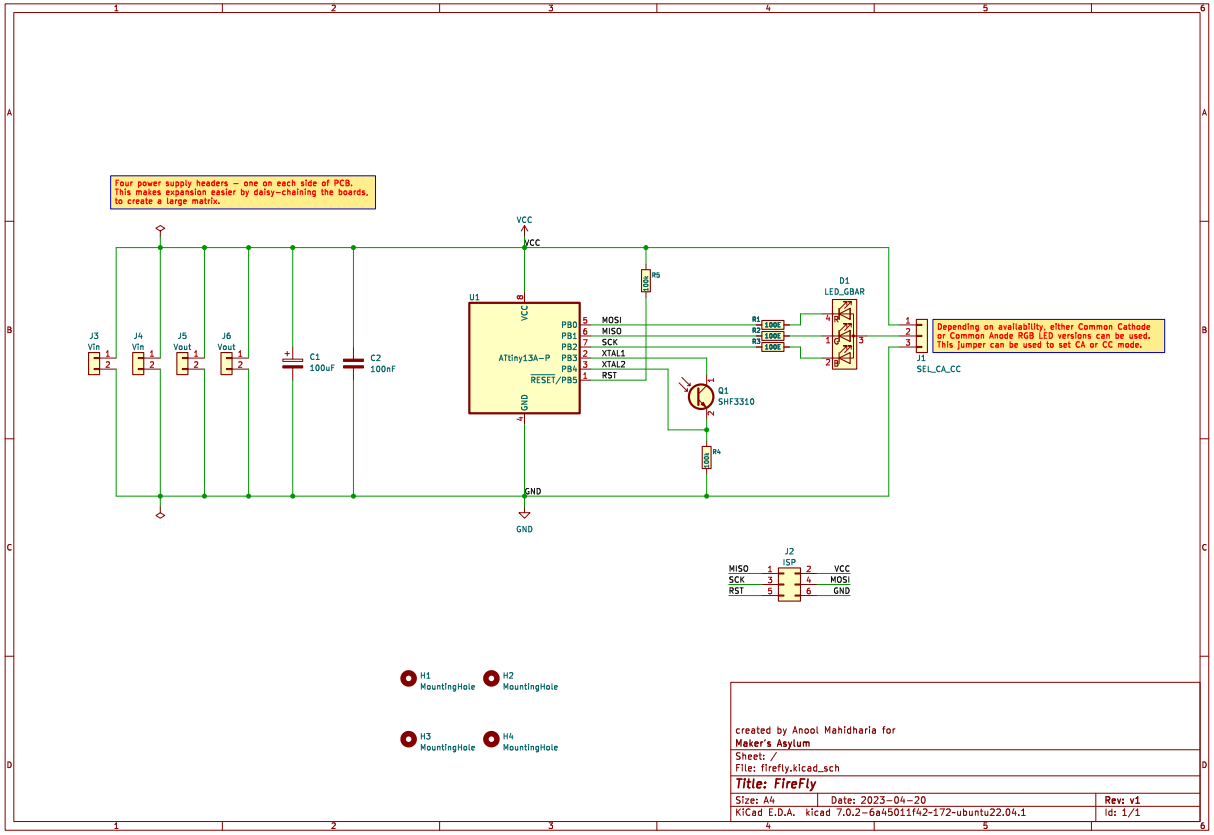
“FireFly” v1 Collaborative Art Installation

(Proposed project for Innov School Practicum)

Requirements

- Complexity level – between MODERATE and SIMPLE
- Must include elements of
  - Electronics (soldering)
  - Arduino (programming)
  - Rapid prototyping (3D printing / laser cutting)
  - Collaboration
- Powered by 5V – power bank, wall adapter, charger etc
- Expandable / Hackable

Schematic



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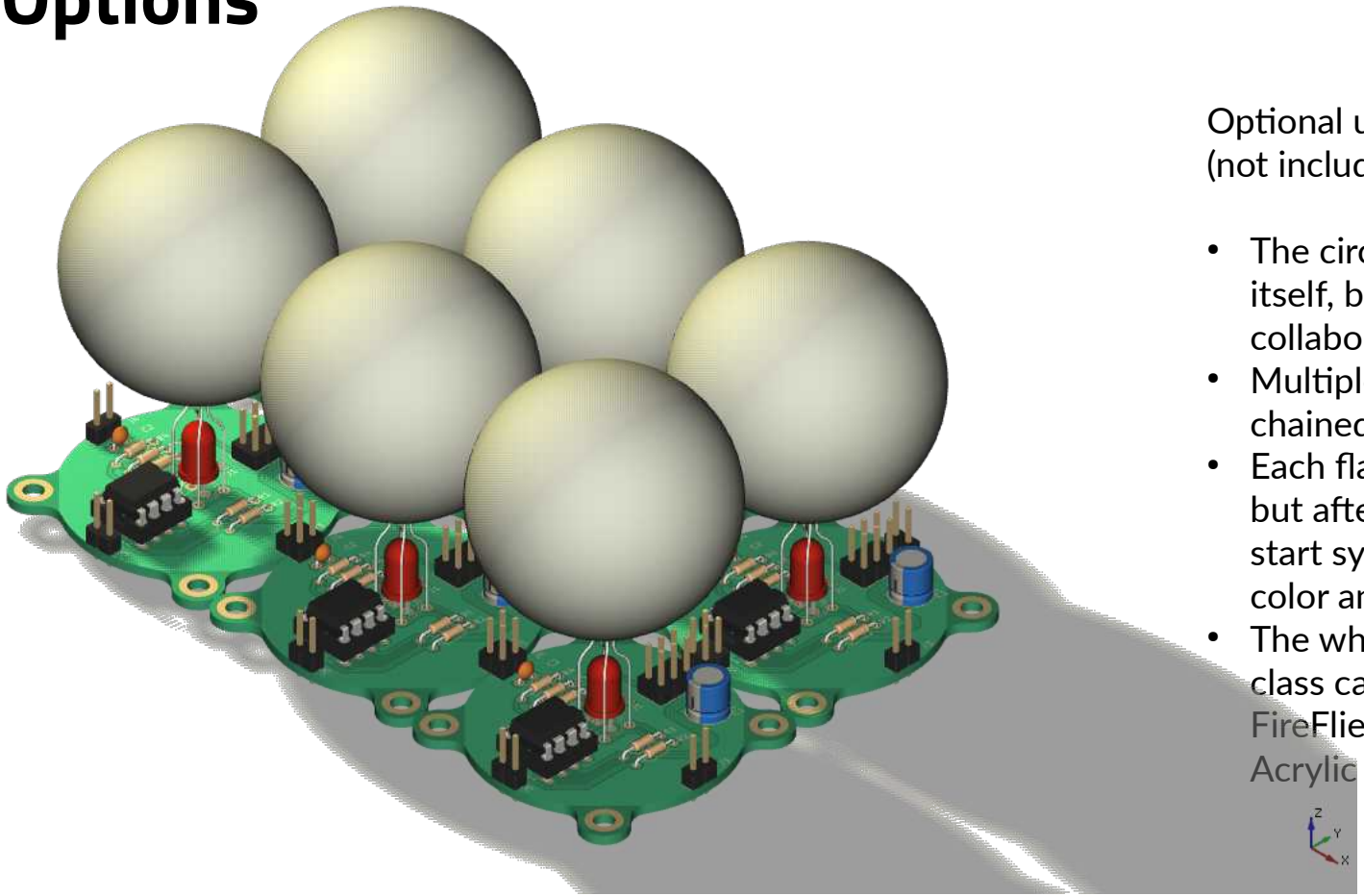
Components:

- ATtiny13
- RGB LED, 5mm, CA/CC
- Light Sensor
- 5 resistors
- 2 capacitors
- Header pins
- Header pin shorting links
- PCB
- Ping-Pong ball

Options



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Optional upgrades
(not included in kit)

- The circuit is complete by itself, but this is a collaborative project.
- Multiple PCB's are daisy chained together.
- Each flashes randomly, but after some time, they start synchronizing their color and flashing rate.
- The whole Practicum class can mount all their FireFlies on a MDF or Acrylic board.

PCB Render

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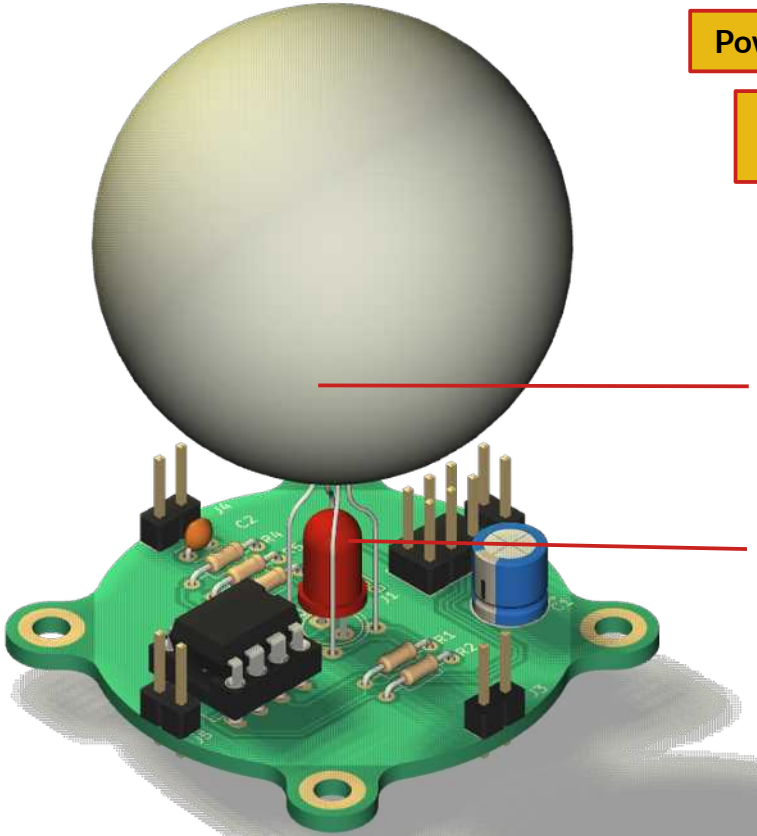


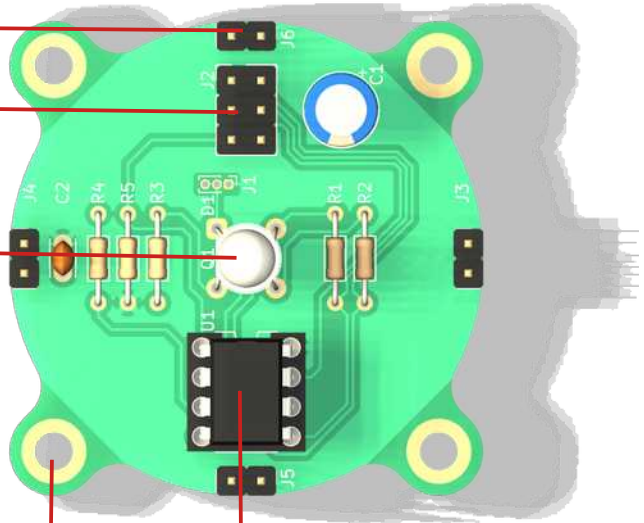
Power headers, x4

SPI header, programming

RGB LED

Ping-Pong Ball diffuser

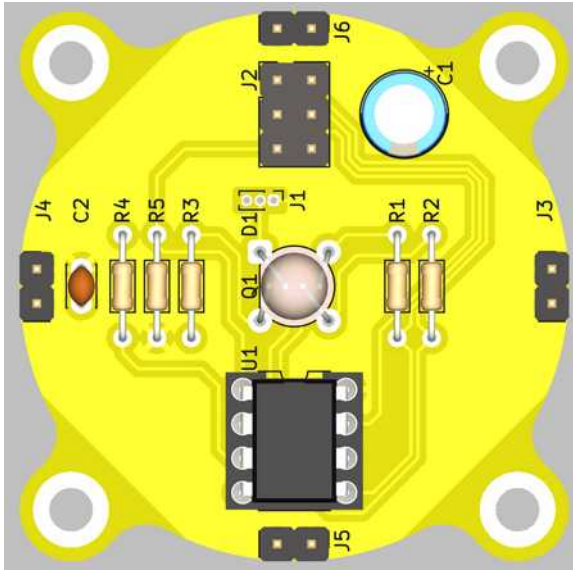
Light Sensor under RGB LED

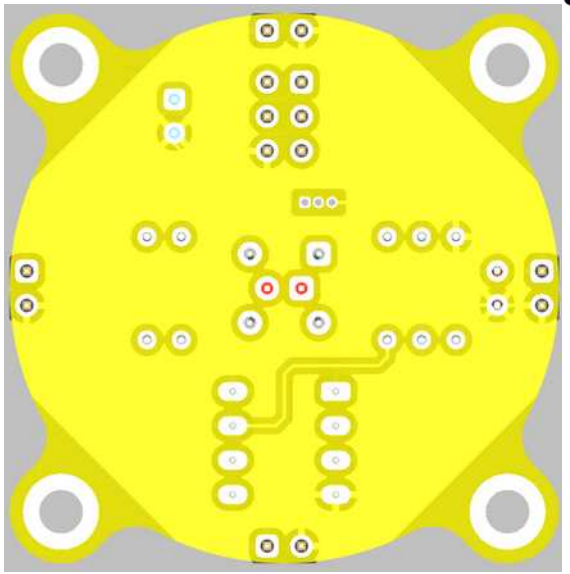


ATtiny13

Mount holes

PCB Front / Bottom view

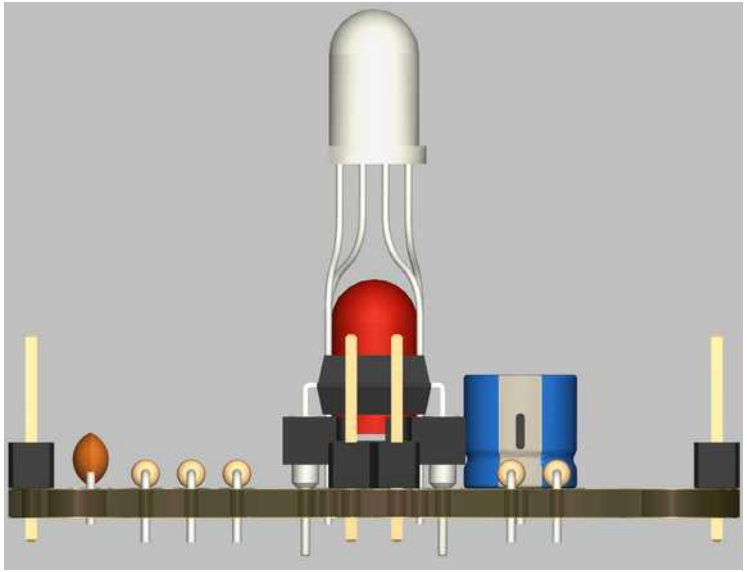


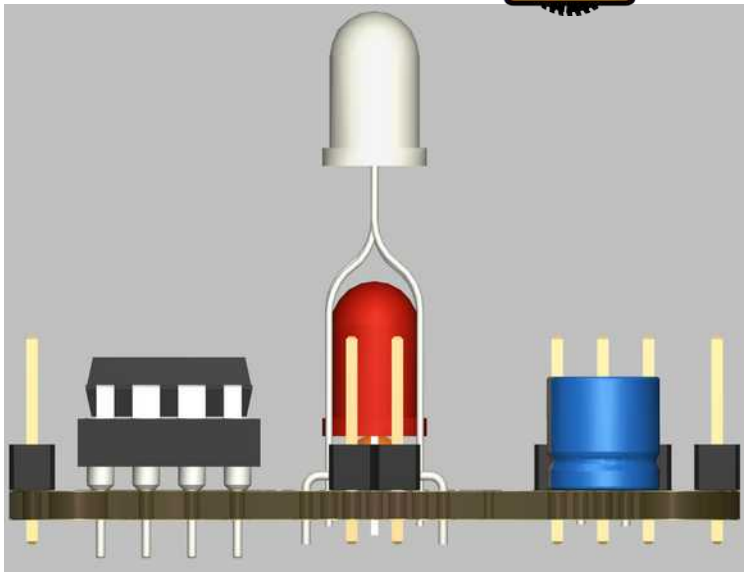


- All parts are mounted on front side.
- All parts are through hole so soldering is easy

- Add some funky text / graphics on bottom

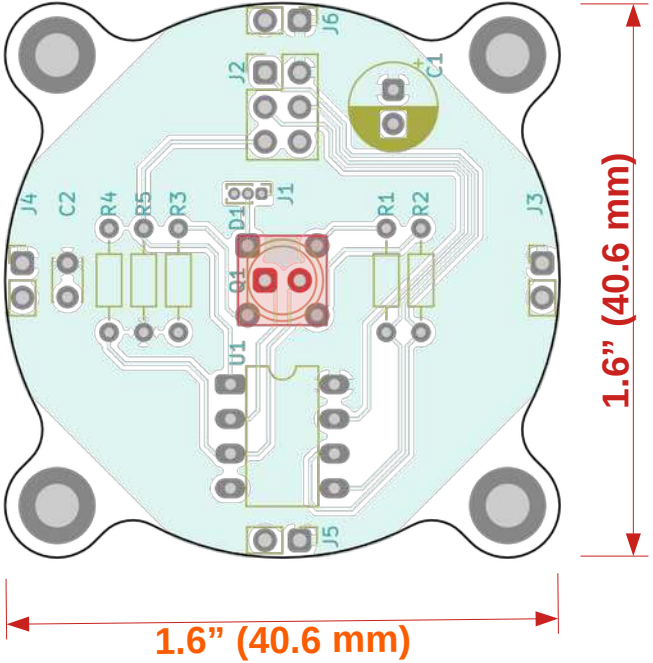
PCB Side view

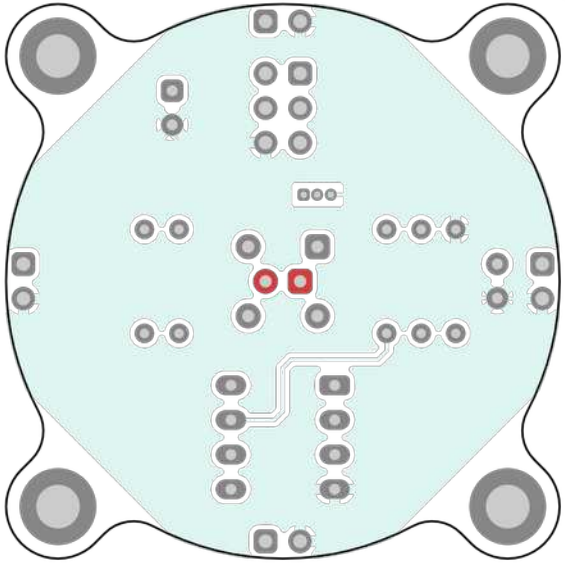




- Side views of the PCB.

PCB dimensions





1.6 inches x 1.6 inches
(40.6 mm x 40.6 mm)

Installation

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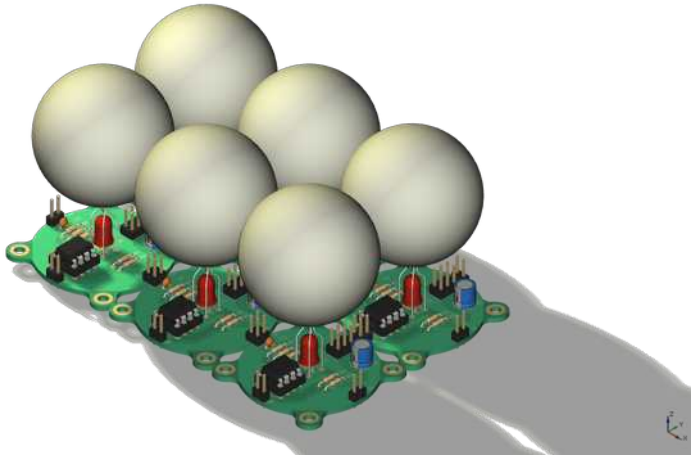

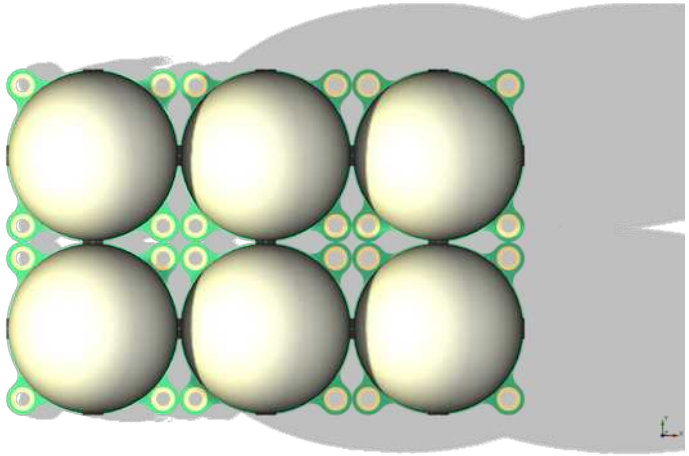

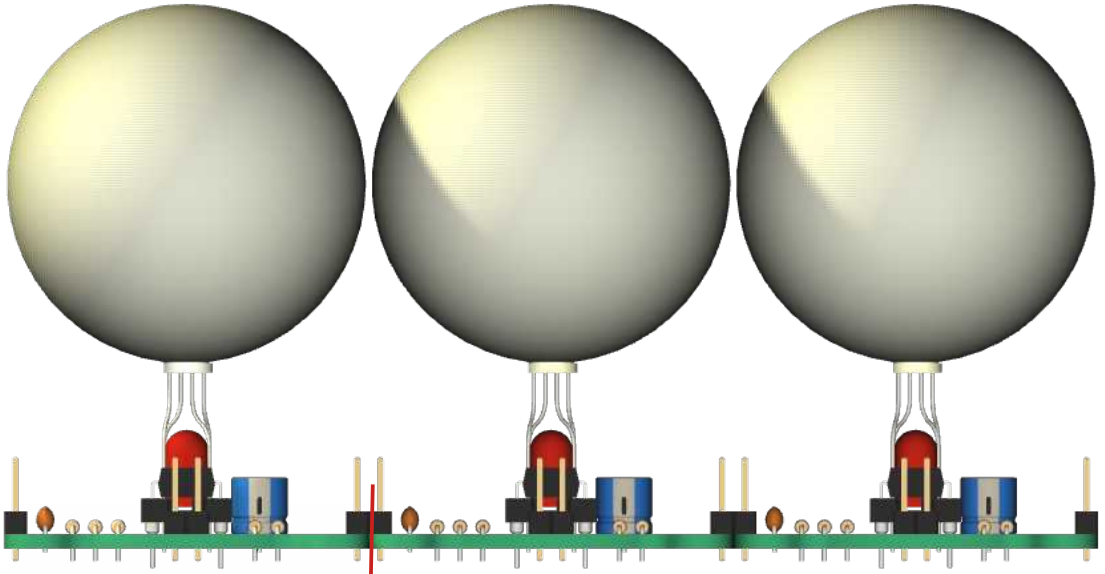

2 Pin Shunt / Jumper Cap

Individual PCB's are connected to each other using header pin shorting links. Connections are just for power supply.

NOTES

- Derived from:
  - https://www.instructables.com/Synchronizing-Fireflies/
  - https://tinkerlog.com/howto/synchronizing-firefly-how-to/
  - https://github.com/tinkerlog/fireflies
- Microcontroller is ATtiny13. Running Arduino on it will take some effort.
- Original code is available as a ‘Makefile”. This will have to be reverse engineered to work as Arduino code.
- More details on algorithm, code etc on the Instructables page