A.L.I.S.H.A. MKE-Mini

A**rduino based **L**ED & **I**ntegrated **S**ervo **H**elmet **A**ctuator **MKE-Mini is a simple to install ESP32-C3 shield module that allows DIY people to easily motorize and light up their favorite 3D printed Iron Man helmet or any other helmets (i.e. Batman, Gray Fox, etc.). Drives up to 3 MG90S servos (recommended), Control for 2 LEDs for eyes (PWM), 1 button/switch port for controlling board operation and one 3 pin port for expansion.

*****The Board needs to be powered with a USB Powerbank, example: 5v (2.1A) -or- 5v (2.4A) -or- 5v (3A). DO NOT USE "AA" OR "AAA" BATTERY PACK, THEY CAN DAMAGE THE BOARD*****

LED port has a current limiting resistor.

Full documentation, and instructions are on the ***Crash Works 3D GitHub Page***.

Board size: 32mm x 30mm

Includes:

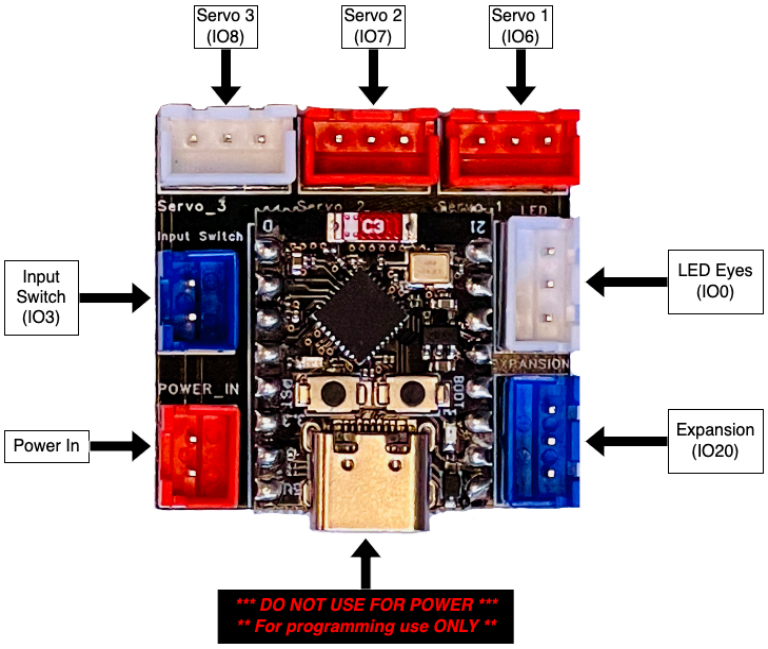
- ESP32-C3 Microcontroller
- MKE-Mini board with JST-XH (2.54mm) female pin headers for easy jumper wire connection
- 3 - 3-pin headers for jumper wire connection to Servos
- 1 - 2-pin header for jumper wire connection to Power In Port
- 1 - 2-pin header for jumper wire connection to Input Switch
- 1 - 3 pin header for jumper wire connection to LEDs
- 1 - 3 pin header for jumper wire connection to expansion module

Included are the following pre-wired connectors.

- Two 3-pin wired connectors for servos; they are color coded (**Black = Ground** / **Red = +** / **Yellow = S**). ***MG90s servos Signal = Orange***
- One 2-pin wired connector for power input. (Red = + / **Black** = Ground)
- One 2-pin wired connector for switch input (Either **Green wire** set or a **Blue wire** set) **** Switch input is not polarity sensitive****
- One 3-pin wired connector for LEDs (Red = + / **Black** = Ground)

The board is powered using the "Power-in" connection on the top-left side of the board; this is a standard JST-XH (2.54) connector. You can use the included 2-pin wired connector to power the board. ***** Do not power the board by plugging a USB cable directly into the ESP32-C3 module, also the input voltage is 5V DC, and cannot be exceeded, DO NOT USE "AA" OR "AAA" BATTERY PACK, THEY CAN DAMAGE THE BOARD*****

You can connect your LEDs to using the included 3-pin wired connector, the Red wire connects to the positive of your LED, and the Black wire connects to the negative of your LED.



The Input is triggered by a momentary “Normally Open” type switch, which you provide. You can use the provided 2-pin wired (either **Green wire** set or **Blue wire** set) connector to add your switch for controlling board operation.

****** You cannot use a “Normally Closed” Type Switch. If using a Limit switch, you must wire to the “C” (common) and “NO” (Normally Open) terminals on the switch. ******

The module is pre-flashed with the Crash Works 3D code. Once you have correctly wired your Servos and LEDs, upon initial power up the LEDs will blink and the servos will move to their home position. Upon the 1st input (button press from switch) it will let the system know you are ready for operation. Each button press after this will trigger a function to either open the helmet (turn the LEDs off) –or- close the helmet (turn the LEDs on). If you “**Double Tap**” the Button the Button it will adjust the brightness of the LED eyes, there are 4 settings: Off, Low Brightness, Middle Brightness, and High Brightness.

If you are looking for 3D printable file kits for Iron Man helmet motorization, visit Crash Works 3D Thingiverse page.

https://www.thingiverse.com/crashworks3d/designs

Additional resources, and products can be found on our Linktree.

https://linktr.ee/crashworks3d

Thank you for your purchase, we hope you enjoy using our system and wish you the best with your project.