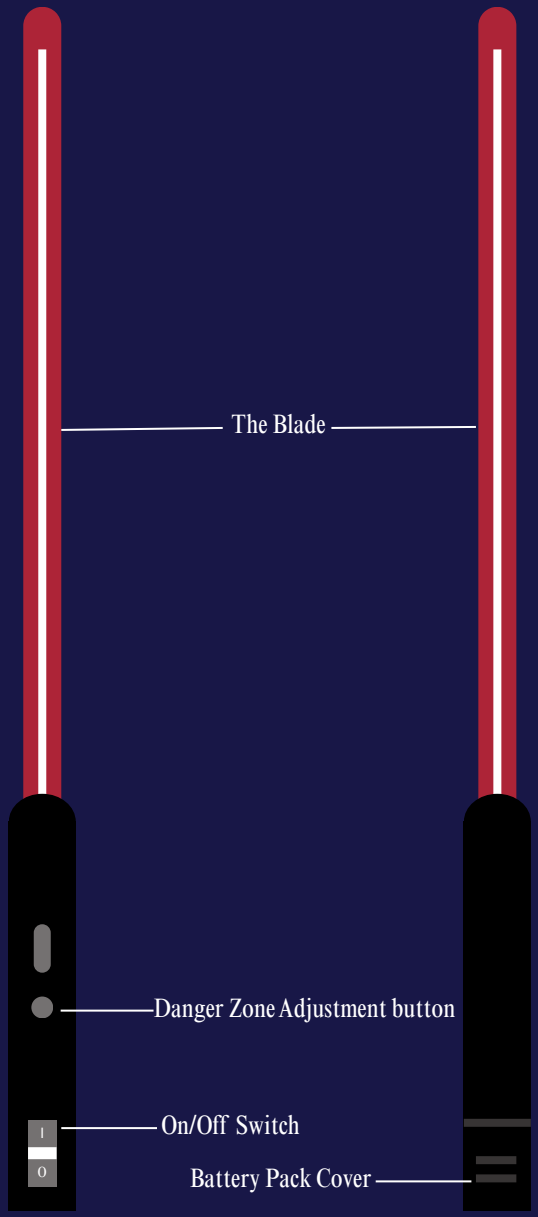

StarSaber User Manual

Product Parameters

LED Power	12V for LED
LED Color	Multicolor Mode
Blade Length	78 +/- 0.1 cm
Hilt Length	45.3 +/- 0.1 cm
Total Length	123.3 +/- 0.1 cm
Weight	1156.3 +/- 5g
Blade Material	PVC
Hilt Material	PLA
Working Time	8 hours
Power Supply	5V

Operation Guidelines

Startup/Shutdown

To turn on the StarSaber, press the ON/OFF switch (the I-side should be pressed inwards)
Once on, the blade will light with a default color being green. Then, the blade is ready to fight. To turn off the blade press the switch in the opposite direction (the O-side should be pressed inwards).

Color Adjustment

Press the push button on the hilt to change the StarSaber's blade color. There are 2 different colors: red and green.

Danger Zone Position

Using the push button on the hilt, one can adjust the location of the danger zone. Once pressed, a sound is emitted sating "Danger Zone". This region takes up one half of the blade, or approximately 39 cm of the blade's total length. Green color indicates that the danger zone is in the lower half and the opponent should aim there to gain points. Switching to the red color means that the danger zone is now shifted to the upper half of the blade. The danger zone is bounded by the blade's length which means it can not go anywhere beyond 78cm.

Power Supply

- 4 CR2032 lithium batteries (3V each) connected in series to provide 12V to power the LED strip.
- 3 AA Alkaline batteries (1.5V each) connected in series to provide 4.5V to ensure functionality of StarSaborpower the ESP32 microcontroller and game logic.

Multiplayer Mode

In Multiplayer Mode, two players go head-to-head using the StarSaber lightsabers. The goal is to collect as many points as possible in a specific period of time. Points are granted when one player hits the opponent's blade and are computed according to the following criteria: the strength of the player's grip, the force of the swing, and whether the danger zone is hit or not. The danger zone is an adjustable part of the blade that players can adjust using a push button and is the only section that accounts for extra points once hit. The grip strength, measured by a sensor in the hilt, acts as a multiplier directly proportional to the strength: the tighter the player holds the saber, the higher the score multiplier. Similarly, the larger the swing acceleration (fast and powerful hit), the higher the multiplier.

Points are instantaneously saved and sent through Wi-Fi, assuring synchronization in real-time. When the players decide to stop playing, they can check the scores. The player with a higher score total is the winner.

IMPORTANT: The tiny blue sensor placed on the hilt should be facing the player, not the opponent, for correct score calculation; else the opponent will gain the extra points once collision occurs.

Points Calculation

Points are calculated based on 3 factors: location of the hit, grip strength and the acceleration of the saber. The main point additive is a hit in the danger zone adjusted by the player. The grip strength and acceleration add a multiplicative factor to these extra points. The multipliers for the grip strength and the acceleration are calculated based on the formulas respectively:

Grip Multiplier = 1+ (force-500)

Acceleration Multiplier = 1+ acceleration/15000

Brightness Adjustment

The blade is programmed to adjust its brightness based on the outside environment to make it more power efficient. For example, in day time, the blade will decrease its brightness whereas it luminates brighter while using it during the night.

FOC Function

Once the blades hit, each produces a clash sound assuring collision. The swing as well produces a sound effect which indicates an accelerated swing and/or hit.

Troubleshooting

- **The StarSaber stops working or doesn't turn on:**
  Try changing the batteries into new ones.
- **The blade does not light up once the saber is turned on:**
  Try to turn it off then on or shake it gently to avoid breaking any part.
- **The StarSaber does not power on:**
  Make sure all the 11 AA batteries are full and installed correctly. If in doubt change the batteries.
- **Color of the blade is dim:**
  The light saber is programmed to be environment-dependent. If it remains dim indoors, try changing the batteries.
- **No sync between sabers:**
  Ensure both sabers are connected to Wi-Fi or restart both sabers.

Warning!!!

- Avoid eye and face contact. Never try to aim the StarSaber towards your opponent's face or head. Such hits can cause severe injuries.
- Keep away from the use of children below 7
- The product brightness may be very bright thus affecting eyesight when looking directly at it for a long period of time.
- Each saber is for individual use. This means that in a single game, players are not supposed to share their sabers to ensure correct scoring.
- Adult supervision is advisable for users under 12 years old to avoid injuries or misuse.
- Keep away from liquids and extremely hot items to avoid the StarSaber malfunctioning.

Hazard!

This product contains tiny parts that if unscrewed may be swallowed by children.