

Autoranging Flashlight

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Introduction

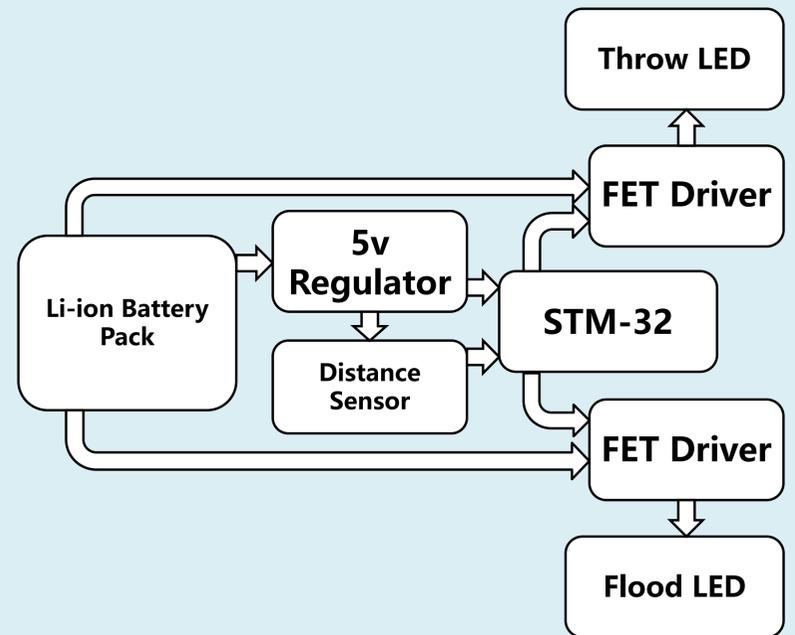
The autoranging flashlight allows the user to carry both a spotlight and floodlight in one convenient package. It quickly and seamlessly adjusts between the two, based on the target distance.

Features:

- Intuitive user-interface with variable brightness
- 1000 lumen max brightness
- Useful “blinky” modes such as strobe and SOS
- LED's have a minimum color rendering index (CRI) of 80

Design

- Utilizes LIDAR-Lite 3 “time of flight” laser distance sensor
- Uses STM32F446 microprocessor
- Program reads variable frequency output from distance sensor and calculates best ratio of flood/throw output
- LED's powered by independent low resistance FET drivers
- LED's controlled via PWM
- 3D printed enclosure



Results

- Easy to use 2-button interface
- Buttons are backlit and easy to find
- User interface allows the user to change overall brightness.
- Features low voltage protection, as well as timed stepdown to avoid overheating.
- Fast automatic adjustment between spot and flood
- Enclosure is comfortable and easy to hold
- Fast PWM is unnoticeable to human eyes

