Breathe With B – Operational Description

The *Breathe With B* is a device that measures the user's breathing patterns and provides user feedback through a phone application that communicates via Bluetooth (2.4GHz). The device also provides visual and haptic feedback. The user brings the device to its mouth to breath into it which will be automatically detected by a pressure sensor. The data is then processed by the MCU (ESP32) which is communicating with the phone application through Bluetooth. The device will also turn-on/off LEDs (visual feedback) and activate a vibration motor (haptic feedback) based on the breathing pattern of the user. The goal is to help the user monitor and improve his breathing patterns.

The device is battery operated and using one Li-Po battery (3.7V, 60mA) which is managed by a battery charger providing a regulated 4.2V output. It can be recharged through a standard USB port (Micro USB Type B). This output is used to power the motor and LEDs. It also feeds an LDO regulator that provides 3.3V to the MCU (ESP32) and other digital ICs. The device will automatically turn off (sleep mode) when no breathing is detected. It is not intended to be used while plugged in and charging.

The visual feedback (LEDs) and haptic (vibration) can each be enabled/disabled through a button directly accessible to the user. The device also has an accelerometer to detect user's movement and orientation. There is also an 64Mb SRAM to store data if no active Bluetooth connection is available.

http://breathewithb.com/start/