Technical Description of the Drop ENTR Mechanical Keyboard

Istiaq Ahmed

City College of New York

ENGL 21007

Professor Carr

March 2nd, 2022

Table of Contents

Introduction

History of Mechanical Keyboards:

The keyboard is a device people have been using in some way or form for several centuries. The first ancestor of the keyboard can be traced down to early typewriters. It was 1868 when the first modern mechanical typewriter was patented by Christopher Latham Sholes (Bellis, 2020). The QWERTY format, the most popular formatting of letters on a keyboard, was also formatted and patented by Sholes a year later to separate common pairs of letters due to the typewriter's rigid keys (Bellis, 2020). From then on, the typewriter became a staple in the typography industry and later evolved as newer iterations of it were being invented. One major technological breakthrough that occurred was when typewriters were being combined with punch card systems, being a basis for early calculators and becoming commercially successful (Bellis, 2020). It's grand commercial success helped influence more advanced technologies that act as stepping stones to modern keyboards today.

It's because of this innovation that the 1946 Eniac and 1948 Binac computer used this very technology to get the typewriter's input and create computer data and print results (Bellis, 2020). This in turn would be the first official connection between early keyboards and computers, which exemplifies the demand for more innovations in keyboard technology. By the 1970s, keyboards were paired with computers with a video display terminal, where text became instantly visible when typed through the keyboard ("Typing Through Time: Keyboard History", 2019). Keyboards at this time were heavy and fully mechanical, and because of that they were mostly marketed towards programmers and engineers ("Typing Through Time: Keyboard History", 2019). It was only until the company IBM released their first personal computer with the Model M mechanical keyboard, now being smaller and more accessible to the general public ("Typing Through Time: Keyboard History", 2019). Due to this innovation by IBM, it was here when mechanical keyboards became marketable to everyone, and from then on keyboards started varying in size, colors, formatting, and feeling. Now, millions of people around the world use keyboards all different from each other, fit to each person's preferences.

History of Drop/Massdrop:

Steve El-Hage was in the University of Toronto when he started studying bulk buying, and with the help of Nelson Wu they went to Silicon Valley and launched the company Massdrop

in Julya 2012, directing their marketing towards BMW and Audi communities (Dean, 2014). Their business model originally revolved around communities participating in discussions and polls, and the selected product would be negotiated and bought in bulk to sell to consumers at a cheaper price (Konrad, 2014). This business model was a success, and henceforth they have branched out to several different communities. One example of a prominent community was a company called ErgoDax aiming to scale their keyboards to a larger audience, in which doing so scaled the company's profits ten times in value. After changing their company to Drop, they later created lists of products under this name. Since then, they have released their own lines of audio and keyboard products, such as the Drop ENTR mechanical keyboard.

Keyboard Makeup:

General Composition:

The keyboard is 14.2*5*1.25 inches, or 36*12.8*3.2 centimeters. It weighs about 2.05 pounds, or 0.93 kilograms. It also uses the QWERTY layout.

Exterior Components**:**

The keyboard itself is supported by an anodized aluminum case, being heavy enough to keep the keyboard from moving around. On the back of the keyboard it is official branding, as well as other other features for the owner's convenience (Figure 2). There are rubber stabilizers on the corners that reduce friction on surfaces to also help keep the keyboard in place, as well as adjustable stands on the top for the owner to adjust its position (Figure 2). The keyboard itself has 87 total keys, making it use the tenkeyless format (Figure 1). Tenkeyless generally being a keyboard not having a 10-key number pad, usually being located on the right of the keyboard. Each key is made of a polymer called polybutylene terephthalate, and is compatible with

(Figure 1 - Drop ENTR Keyboard Front)

(Figure 2 - Drop ENTR Keyboard Back)

(Figure 3 - Backside of Keyboard)

Cherry MX switches and clones of that model. It can also be taken out and swapped with other compatible keycaps. On the back side of the keyboard, it contains a USB-C socket to plug into the keyboard and connect it to a device (Figure 3). This model of USB is more up to date and faster than older USB types.

Interior Components:

This model of keyboard uses Gateron yellow switches (Figure 4). Switches on a keyboard are what registers the click and input on the keyboard, which is what makes a keyboard mechanical. There are a multitude of switches in the keyboard switches market, varying by

(Figure 4 - Underneath Space Key)

different tactile response, auditory feedback, and the amount of force required to press on the switch. Gateron yellow switches provide a more quiet, smooth and linear click, being suitable for those typing for a long period of time. For the much larger keys, it also has cherry style black stabilizers that are mounted to the plate (Figure 4). These stabilizers help reduce keys from wobbling and shaking such as the spacebar. Just like switches, these can vary by the manufacturer of the stabilizers on feel and sound. The ENTR's stabilizers are very simplistic and subtle in its design, allowing for a more comfortable typing experience. Underneath the keys and

switches is what takes the input and displays it on your device, and that is the printed circuit board (Figure 5). This specific printed circuit board, or PCB, uses white backlit LEDs that shine through and around the keycaps. It also takes into account the USB-C signal from the case to connect to the device it is connected to.
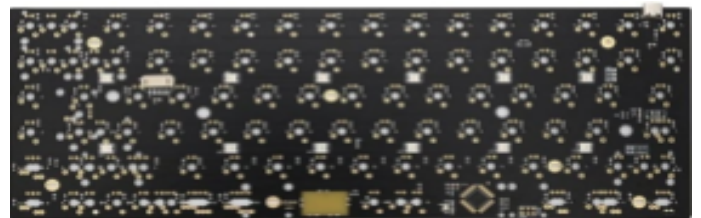

Figure 5 - Printed Circuit Board
(PCBONLINE, 2021)

How To Operate:

How to Use:

1. Firstly, the user must find a flat surface to lay the keyboard on.

2. Once the keyboard is set, the owner must have a cable with a USB-C port on at least one end. Once acquired, they must find the USB-C socket on the back side of the keyboard, then plug it in with the corresponding side of the cable (Figure 4).

3. Once connected, they must use the other side of the cable and connect it to the corresponding port on their device of choice. (The user should also check again to see if the cables are plugged in all the way to the keyboard and device).

4. Once connected to the device, the keyboard is now connected to the device.

5. Now to use it, turn on the device and the keyboard should respond by the white LEDs lighting up. The keyboard should be fully functional and ready to use.

Caution:

When ordering the keyboard, it will come with accessories such as a USB-C to USB cable and a keycap puller to swap out keycaps. When the keycaps are taken off, they might act as a choking hazard for young children. If the keyboard's PCB comes into direct contact with water or other liquids, its functionality might be compromised.

Conclusion:

With the world becoming more and more digital everyday, the need for keyboards is continually rising. With more people needing to type, they are not exempt from an optimal and comfortable typing experience. Drop aims to deliver that experience through its ENTR series of keyboards, being minimal in its design and noise while also being smooth to touch with its choice of switches and keycaps.

References

Bellis, M (2020, January). *The History of the Computer Keyboard.* ThoughtCo. Retrieved March 2, 2022 from:

     https://www.thoughtco.com/history-of-the-computer-keyboard-1991402

(2020). *Typing Through Time: Keyboard History.* Das Keyboard Blog. Retrieved March 2, 2022 from:

     https://www.daskeyboard.com/blog/typing-through-time-the-history-of-the-keyboard/

Konrad, A (2014, June 11). *Massdrop's Zany Plan To Rally Internet Mobs For Discounts Is Working--For Now*. Forbes. Retrieved March 2, 2022 from:

     https://www.forbes.com/sites/alexkonrad/2014/06/11/massdrop-zany-plan-to-crowdsource-discounts/?sh=6dd5cac3752a

Dean, T (2014, September 24). *Massdrop raises $6.5M to enable enthusiast communities to use their massive buying power*. VentureBeat. Retrieved March 2, 2022 from:

     https://venturebeat.com/2014/09/24/massdrop-raises-6-5m-to-enable-enthusiast-communities-to-use-their-massive-buying-power/

PCBONLINE Team (2021, May 13). *Keyboard PCBs: How to Build Custom Mechanical Keyboards*. PCBOnline. Retrieved March 2, 2022 from:

     https://www.pcbonline.com/blog/select-and-build-keyboard-pcbs.html