

Here is a detailed plug-and-play modification of my Hyper Mountain Bike. Most of the info was obtained on this FB page from those who were generous to share info with us. What motivated me to adapt my bike was my desire to have access to lower PAS speeds; I found that the PAS 1 setting (approx. 10 mph) was too fast. I also threw in a throttle control for the heck of it because it was cheap. I will define two terms that I use to avoid confusion: the “PAS display” that sits on the handlebar and controls the PAS speeds, and the “motor controller” that is hidden next to the battery that controls the motor.

I wanted to avoid soldering as much as possible, and I managed but had to splice 2 wires. (Instructions given further)

So, in easy steps here is what I did:

1. I removed the battery and exposed the cables. Here is Youtube link that will show that: <https://www.youtube.com/watch?v=HNxWgzKptOo> . Start watching after the 2 and a half minute mark.
2. I purchased these items on Aliexpress for about \$100 Canadian, or \$75 U.S. : (Note that Ali will often group into a single parcel several items purchased from different vendors. Ali will also lie on customs documents about the cost of the items to help the seller minimize custom fees; for example, they listed the cost of the motor controller as \$5. To avoid having too many items in a single parcel, I placed my orders on 2 different days (seven days apart) limiting the total cost of orders on any single day to \$50; I was not charged custom fees nor sales tax by the Canadian Post Office)

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\*\*\* KT-15A square wave controller (\$39) with cables of type “SM” and “WP” (WP stands for “Weather Protection”); my model number was KT-36/48ZWSR-fff02 ; the item is labelled as “15A SM WP Square” by the vendor.

[https://www.aliexpress.com/item/1005002871149990.html?spm=a2g0o.order\\_list.order\\_list\\_main.10.21ef1802PPy20L](https://www.aliexpress.com/item/1005002871149990.html?spm=a2g0o.order_list.order_list_main.10.21ef1802PPy20L)

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The cables are fairly easy to identify:

- 2 identical 2-pin female connectors, grouped in a plastic sleeve: these are for the brakes and were modified as described below.
- One round "Juliet" 9-pin female cable is for the motor. You will need an extension cable to have that cable connect to the motor. Make sure the existing cable feeding to the motor is a 9-pin cable. If not, it's likely a 10-pin cable in which case you'll have to search this FB page how to adapt to that.
- One 5-pin male connector that connects to the PAS display.
- One red male thick gauge cable and one black female thick gauge cable that connect to the battery
- One 3-pin male connector that connects to the PAS sensor. By the way, the original Hyper sensor cable also has a 3-pin male connector.
- One 3-pin female connector that connects to the throttle cable.

\*\*\* KT-LED900S PAS display with "SM" plug (\$22). It has 5 speed settings and I was hoping that the lowest speed would be lower than 10 mph.

[https://vi.aliexpress.com/item/1005004508623024.html?spm=a2g0o.order\\_list.order\\_list\\_main.38.294b1802nocPpu&gatewayAdapt=glo2vnm](https://vi.aliexpress.com/item/1005004508623024.html?spm=a2g0o.order_list.order_list_main.38.294b1802nocPpu&gatewayAdapt=glo2vnm)

\*\*\*An extension cable for the Juliet 9-pin cable (\$18). My old controller had a non-detachable cable that made its way to a connector close to the rear wheel. Here is a picture of the old controller:



Ensure the new cable has a male connector on one end and a female one on the other. BE WARY that some e-bikes come with a TEN pin cable; search this FB page for what to do if that happens. I chose a 100 cm long cable because the shorter 60-65 cm length seemed too short for me.

[https://vi.aliexpress.com/item/1005005042395527.html?spm=a2g0o.order\\_list.order\\_list\\_main.15.294b1802nocPpu&gatewayAdapt=glo2vnm](https://vi.aliexpress.com/item/1005005042395527.html?spm=a2g0o.order_list.order_list_main.15.294b1802nocPpu&gatewayAdapt=glo2vnm)

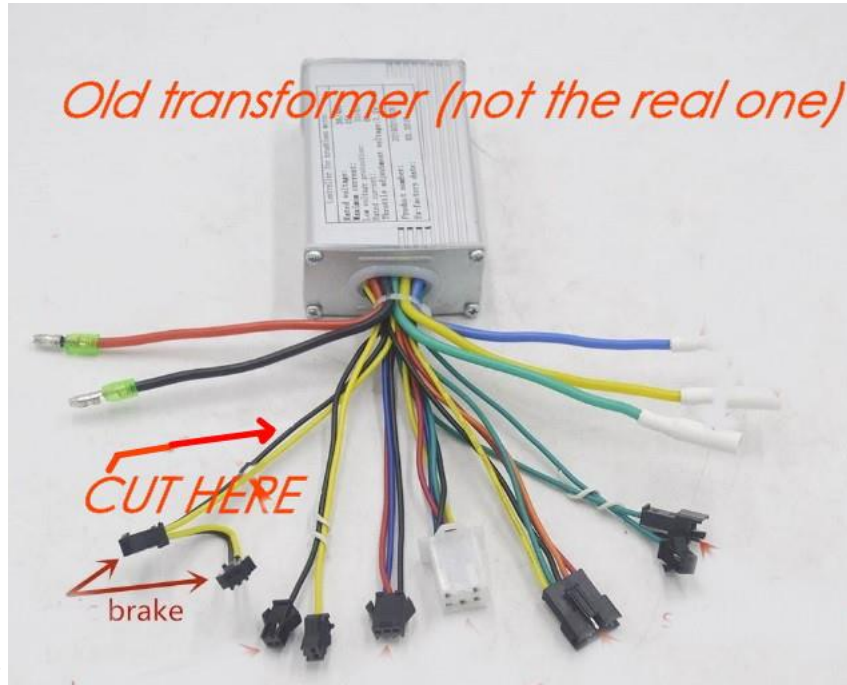
\*\*\* A so-called “300X thumb throttle”. I arbitrarily chose this one (\$12):

[https://vi.aliexpress.com/item/1005004812859613.html?spm=a2g0o.order\\_list.order\\_list\\_main.33.5da21802mmkw6D&gatewayAdapt=glo2vnm](https://vi.aliexpress.com/item/1005004812859613.html?spm=a2g0o.order_list.order_list_main.33.5da21802mmkw6D&gatewayAdapt=glo2vnm)

\*\*\* A KT-D12L PAS sensor (\$12) with SM connector, which can be added easily without tools in 5 minutes.

[https://vi.aliexpress.com/item/1005004036207530.html?spm=a2g0o.order\\_list.order\\_list\\_main.27.5da21802mmkw6D&gatewayAdapt=glo2vnm](https://vi.aliexpress.com/item/1005004036207530.html?spm=a2g0o.order_list.order_list_main.27.5da21802mmkw6D&gatewayAdapt=glo2vnm)

3. I removed the old controller and its approx.. 2.5 foot long cable that connects to the motor.
4. The brake cable on the new motor controller needs to be adapted: I cut off the 2-wire cable from the old controller 1-2 cm from the



controller

and did the same on the new controller



; I then attached the 2-wire brake cable I removed from the old controller to the 2-wire brake cable remaining on the new controller by splicing the wires (see <https://www.youtube.com/watch?v=vt4QA6gHb90> for method used). No need to worry about the colors of the wires that you join.

5. I installed the KT-D12L magnet wheel and PAS sensor onto the crank on the left side of the bike; the flat side of the magnet wheel points inside, i.e. toward the sensor. NO TOOLS REQUIRED AND VERY EASY TO INSTALL. See for example:

[https://www.youtube.com/watch?v=refJSVbUc\\_Y](https://www.youtube.com/watch?v=refJSVbUc_Y)

You may have to glue the sensor in place or find other means of attachment. For this unit to work, I had to switch the positions of the red (+5V) and green (signal) wires (cut and splice) inside the cable coming from the PAS sensor; in other words, cut the green and red cables and splice them connecting different colors together. It has been suggested that extra waterproofing be applied to the sensor. See <https://www.youtube.com/watch?v=HlwdxkLcxZ8> I will just apply a bit of silicone sealant where the wire makes its way into the sensor and around where the two halves of the sensor join

6. I put the new controller in the cavity and routed and connected the PAS sensor cable, the motor cable, the throttle cable, the display cable, the 2 brake cables, and the 2 cables from the battery. Make sure cables outside the cavity cannot rub against moving parts.
7. The rest is obvious.

**EVERYTHING WORKS!** If you don't need the pedal-assist mode, don't buy the PAS sensor and skip that part.