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## Bafang BBSHD BBS02 mid drive -- Flexible OpenSource firmware

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**danielnilsson9** 1 mW



Posts: 12  
Joined: Jan 05 2021 3:09pm

### Re: Bafang BBSHD BBS02 mid drive -- Flexible OpenSource firmware

by **danielnilsson9** » Mar 09 2021 4:02pm

Yes, I'm currently working on the configuration tool to go along with this firmware, a few small things left to do there.

As for the firmware itself there are some minor thing left to do there too but the important stuff is working.

- Still need to do:
- \* Speed limiting according to configuraiton
  - \* Temperature limiting
  - \* Send error codes along to the display
  - \* Turn on/off lights
  - \* Documentation

But the important stuff is working, throttle, pas, communication with the original bafang display etc.

I'm aiming for a public release at the end of the month if nothing else comes up.

There will be two binary files, one for controller revision 1.4 and one for 1.5 since the MCU and the EEPROM layout differs the same binary cannot be used.

I would not recommend building and flashing the firmware at the moment as the status is unknown at times and config tool not yet useful, especially not if you have controller revision 1.4 since there is no way of going back to the original firmware.



**silene** 10 μW



Posts: 5  
Joined: Jul 31 2017 4:08am



### Re: Bafang BBSHD BBS02 mid drive -- Flexible OpenSource firmware

by **silene** » Mar 19 2021 7:12am

Very nice, great work. I wonder how many hardware revisions of BBS02 exist / how hard would it be to support it.



**jtrappett** 1 μW



Posts: 1  
Joined: Apr 14 2014 5:39pm



### Re: Bafang BBSHD BBS02 mid drive -- Flexible OpenSource firmware

by **jtrappett** » Mar 20 2021 7:16pm

“ **cavi** wrote: ↑

Apr 13 2020 8:29pm

I have a BBSHD on my bike and a BBS02 on my wife's bike, and honestly I do not have any complaints. I will state that I have taken many many versions of software programming versions to get where I am happy. While it will never sense torque, my original problem was that when pedal cadence rises and power from the motor remains constant the pedal feel would disappear where you were doing nothing other than chasing the pedals. After much work I now have it where as pedal cadence rises the motor output drops. This way my pedal resistance remains and I still get a workout. I have it set where I use mainly PAS levels 3,4 and 5 (on uphill) Level 6 and 7 only for hill climbs. In level 3 and 4 it basically feels like a normal bike, you even forget it is electric. Not that it is not doing anything, you just do not feel it. Of course part of success is maintaining the bike in the correct gear. My system also never heats up!!

I would love to see your settings... or have a copy of the config file ?? I

have worked on mine quite a bit also.. basically I use an unlimited setting but PAS level 1 is different to allow some grunt for standing starts.



**Waynemarlow** 10 kW



Posts: 588  
Joined: Jul 09 2016 7:22am  
Location: Bucks, England



### Re: Bafang BBSHD BBS02 mid drive -- Flexible OpenSource firmware

by **Waynemarlow** » Mar 24 2021 5:02pm

You may have noticed Garmins release of its Power meter pedals. Now combine them with the BBS02 and you have a pretty good torque based motor. Shame about there cost.



**casainho** 100 GW



Posts: 5159  
Joined: Feb 14 2011 2:43pm



### Re: Bafang BBSHD BBS02 mid drive -- Flexible OpenSource firmware

by **casainho** » Mar 24 2021 5:20pm

“ **Waynemarlow** wrote: ↑

Mar 24 2021 5:02pm

You may have noticed Garmins release of its Power meter pedals. Now combine them with the BBS02 and you have a pretty good torque based motor. Shame about there cost.

Maybe there are chinese cheap alternatives for that type of pedals??

- [EBike wireless standard](#): wireless motor, wireless cycling GPS display Garmin Edge and wireless remote with wireless brake sensor
- [TSDZ2 FAQ: issues and repairs, etc](#)
- [TSDZ2 OpenSource firmware](#)

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Please consider a donation to help developments: [paypal.me/jorgecasa](https://paypal.me/jorgecasa)



**Djoene** 10  $\mu$ W



Posts: 6  
Joined: Nov 30 2018 1:06pm



### Re: Bafang BBSHD BBS02 mid drive -- Flexible OpenSource firmware

by **Djoene** » Mar 25 2021 2:19pm

cheapest alternative that i found is like a paste on solution for the crankarm

it works with bluetooth and ant+  
not much reviews for this one tough..

[https://www.probikekit.co.uk/cycling-po ... lsrc=aw.ds](https://www.probikekit.co.uk/cycling-po...lsrc=aw.ds)



**casainho** 100 GW



Posts: 5159  
Joined: Feb 14 2011 2:43pm



### Re: Bafang BBSHD BBS02 mid drive -- Flexible OpenSource firmware

by **casainho** » Mar 26 2021 7:31am

Hi danielnilsson9.

I got a donated BBSHD motor controller with wrong firmware on it. When I have time, I wish to install the firmware and connect to a TSDZ2 motor I have and test it. I only have a TSDZ2 motor and I hope it will work... and I can use a throttle as input.

I am on Linux and I also use the Visual Code Studio. I saw that you recommend to install the SDCC, this means SDCC supports this microcontroller? and if so, are you able to debug the code (use breakpoints, see variable values, etc) or you are only flashing the firmware?

I think the BBSHD usually is sold with the 860C or SW102 displays and we developed our own OpenSource firmware for them, and the firmware is flashed with a UART cable, is easy for user as it the same tools as for flashing the motor firmware. Don´t you want to make a fork of the 860C display to make it working for BBSHD and include the specific

configurations of your firmware? – the user would then be able to change the configurations on the fly, while riding for instance and would not depend of a computer!

And our firmware have advanced features like battery SOC estimation, with automatic battery resistance calibration, etc.

Note that there are two US shops selling TSDZ2 motor and 860C display, with our OpenSource firmware installed. As BBSHD is also very famous, I think they may want to sell it also and that would improve your project awareness, meaning more success:

- [https://www.electrifybike.com/store/c38 ... ducts.html#/](https://www.electrifybike.com/store/c38...ducts.html#/)
- [https://www.eco-ebike.com/collections/t ... f-products](https://www.eco-ebike.com/collections/t...f-products)

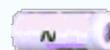
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**danielnilsson9** 1 mW



Posts: 12  
Joined: Jan 05 2021 3:09pm



### Re: Bafang BBSHD BBS02 mid drive -- Flexible OpenSource firmware

by **danielnilsson9** » Apr 02 2021 4:13am

**casainho** wrote: ↑  
Hi danielnilsson9.

Mar 26 2021 7:31am

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- [https://www.eco-ebike.com/collections/t ... f-products](https://www.eco-ebike.com/collections/t...f-products)

I think it should be possible to connect to tsdz2 motor but I haven't tested. The config tool is windows only though but the default config will give you throttle support.

Yes SDCC support the 8051 architecture so no trouble. I'm using the full visual studio (not code) but it's basically a makefile project just as your tsdz2 firmware so I'm sure you will have no issue getting it to compile on linux.

I haven't investigated if it it possible to get a debugging environment, I have only done flashing and print debugging...

I will not expand this project beyond supporting standard bafang compatible displays. But anyone is free to take it further if they want. 😊



**maki1000** 1 μW



Posts: 4  
Joined: Oct 07 2019 8:38am

### Re: Bafang BBSHD BBS02 mid drive -- Flexible OpenSource firmware



by **maki1000** » Apr 17 2021 5:48am

If you manage to add a pressure sensor and software like in TSDZ2, it will be the best motor for a regular bicycle frame! good luck you are great



**casainho** 100 GW



Posts: 5159  
Joined: Feb 14 2011 2:43pm

### Re: Bafang BBSHD BBS02 mid drive -- Flexible OpenSource firmware



by **casainho** » Apr 17 2021 6:29am

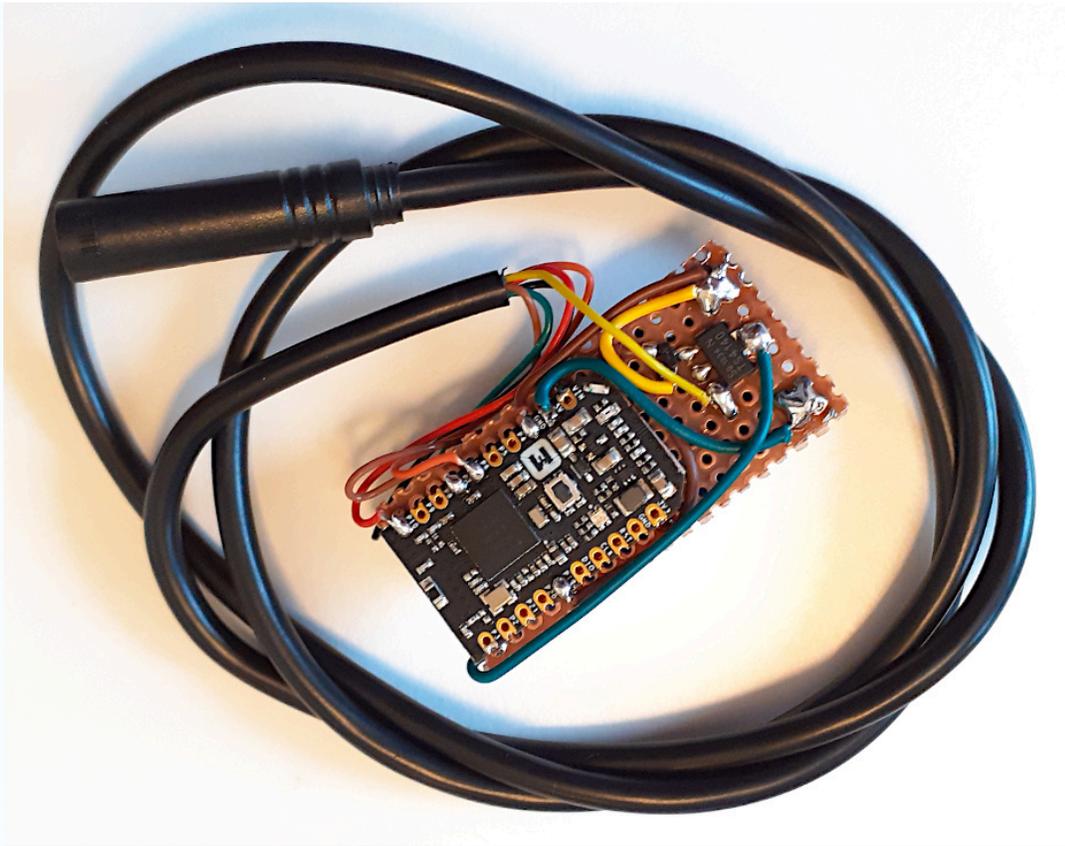
“ **maki1000** wrote: ↑

Apr 17 2021 5:48am

If you manage to add a pressure sensor and software like in TSDZ2, it will be the best motor for a regular bicycle frame! good luck you are great

Pressure sensor can be the already existing commercial solutions for pedals torque sensors, that send the value by ANT or Bluetooth, then, an EBike wireless controller that we are using on the TSDZ2, could receive the torque value from the wireless pedals torque sensor and send to the BBSHD motor controller:

<https://opensourcebike.github.io/ebike ... oller.html>



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