



# MHD

---

# USER GUIDE

Revision 8.21 • 5/5/2022

© MHD Tuning

# Table of Contents

<b>Overview</b>	<b>5</b>
Supported Vehicles	5
MHD Flasher N54	5
MHD Flasher N55-E	5
MHD Flasher F+G	6
Hardware Requirements	7
Mobile Device	7
Supported Adapters and Cables	7
MHD Black Wifi Adapter	7
MHD E-Series Wifi Adapter	7
K+DCan Cable	8
ENET Cable	8
<b>Getting Started</b>	<b>8</b>
Logging In	9
Social Login Options	10
MHD Account	10
Existing Licenses	11
Cross Platform Licenses	11
Purchase New Licenses	12
Activate License Keys	12
<b>Connecting to Car</b>	<b>14</b>
WiFi Adapter (Orange or Black)	14
Keeping Cellular Data - Android	14
Keeping Cellular Data - iOS	15
Connection Permission with iOS 14 and up	16
K+DCan Cable	16
ENET Cable	17
<b>Flashing your Car</b>	<b>18</b>
OTS Maps	18
Navigating the OTS Maps Screen	18
OTS Maps Process Overview	19
Custom Tunes	21
Flash a Custom Tune Process Overview	22

Flash Options	24
Linear Throttle	25
Adjust Throttle Sensitivity	25
Minimum Idle RPM	25
OEM Catted Downpipe(s)	25
VMax Delete	25
Exhaust Burble Customization	26
Cold Start Delete	26
Exhaust Flap Open In Sport	26
Startup Roar	26
OPF Delete	26
Boost per Gear	27
Torque per Gear	27
Kickdown Prevention	27
Shift Bog Fix (Tq Lim 2048 - hard limiter)	27
6MT Launch RPM	27
Rev Match Disable	27
T-Map Sensor	27
Ignition Coils	28
ADV O2 Sensors	28
XDI HPFP	28
Dorch HPFP	28
Sport cooling mode for intercooler	28
Motiv FlexFuel Kit	28
Coolant Mode	29
PI Safety (coil cut)	29
Wastegate Rattle Fix	29
Desensitize Knock Sensors	29
Flash Counter Reset / Freeze	29
Overrun BRAP	29
MSA Disable	29
Flash Options - Engine Chart	30
<b>Return to Stock</b>	<b>32</b>
Flash Back to Stock	32
Flash Stage 0 (stock power)	32
Generate Updated Backup	32
<b>Data Logging</b>	<b>33</b>

Gauge Interaction	34
Changing Gauge Parameter	34
Reset Min/Max Display	34
Changing Gauge Style / Appearance	34
Monitor Options	35
Gauge Alerts	36
Graph a Log	37
CSV File Actions	38
Share to SpoolStreet	39
<b>Read DME Codes</b>	<b>40</b>
<b>Reset Adaptations</b>	<b>41</b>
<b>MHD+ Suite</b>	<b>42</b>
Antilag	42
Rolling Start	42
DCT Launch Control Start	43
Map Switching	43
Instructions	44
General Info	44
FlexFuel	45
Requirements	45
Useful Logging Parameters	45
MHD+ Menu System	46
Page 1 - Mapswitch	46
Page 2 - Exhaust Flap Control	46
Page 3 - Ethanol Content Quick View	46
<b>MHD Backend Flash + JB4 Flowchart</b>	<b>47</b>
<b>FAQ</b>	<b>47</b>
<b>Revision History</b>	<b>49</b>

## Overview

MHD Flasher is the first mobile application to bring ECU tuning and monitoring to multiple BMW platforms. The MHD Flasher reveals the immense margin of power BMW left on the table with these engines while still retaining the sophistication, smoothness, and safety of the original engine management program.

MHD Flasher is not only very simple to install, it also makes it easy to keep an eye on the tuning and your engine. You can flash your ECU back to stock at any time, and as often as you need. With support for mostly all Android and iOS devices, download MHD Flasher from their respective app store and get started today!



## Supported Vehicles

MHD Flasher is available as three separate mobile applications depending on the engine and platform of your vehicle. Details are as follows:

### MHD Flasher N54

- 2007 - 2010 135i, 335i / xi, 535i / xi
- 2011 - 2013 335is
- 2009 - 2016 Z4 35i / is
- 2011 - 2012 1M
- 2008 - 2010 X6 35i

### MHD Flasher N55-E

- 2010 - 2013 135i N55, 335i / xi N55
- 2010 - 2013 X5 35i N55
- 2011 - 2014 X6 35i N55

## MHD Flasher F+G

### N55:

- M135i F2x N55 2012 - 2016
- M235i F2x N55 2013 - 2016
- M2 F87 N55 2015 - 2018
- 335i N55 F3x 2011 - 2015
- 435i N55 F3x 2013 - 2016
- 535i N55 F1x 2010 - 2017
- 640i N55 F0x 2011 - 2017
- 740i N55 F0x 2012 - 2015
- X3 35i N55 F25 2010 - 2017
- X4 35i / M40i N55 F26 2014 - 2018
- X5 35i / 40i N55 F15 2013 - 2018
- X6 35i / 40i N55 F16 2014 - 2018
- X-Drive is supported on all cars.

### S55:

- M3 S55 F80 2014 - 2019
- M4 S55 F82 2014 - 2020
- M4 S55 F83 2014 - 2020
- M2 S55 Competition 2018 -
- All Comp, GTS, CS Variants

### S63:

- M5/6 F1x 2012-2016
- X5M F85 2015 - 2019
- X6M F86 2015 - 2019
- M5 F90 2017 -
- M8 F9x 2019 -
- X5M F9x 2020 -
- X6M F9x 2020 -

### B58:

- M140i F2x B58 2016 - 2019
- M240i F2x B58 2016 - 2021
- 340i B58 2015 - 2019
- M340i G2x 2019 -
- M440i G2x 2019 -
- 440i F3x 2016 - 2020
- 540i G3x 2017 -
- 640i GT G23 2017 -
- 740i G1x 2015 -
- X3 M40i G01 2017 -
- X4 M40i G01 2017 -
- X5 40i G05 2018 -
- X6 40i G06 2018 -
- Z4 M40i G29 2019 -
- Toyota Supra A90 2020 -
- X-Drive is supported on all cars.

### N13:

- 114i, 116i, 118i F2x N13
- 316i F3x N13

### S58:

- X3M F97 2019 -
- X4M F98 2019 -

## Hardware Requirements



After identifying your vehicle and determining which MHD series app it falls under, you next must make sure you have the right hardware. There are two pieces to this puzzle: the mobile device, and the wireless adapter or cable which will connect with the car.



### Mobile Device

The only mobile device requirement is the version of iOS or Android that the device is running. To find the version on Apple devices, open Settings > General > About. To find the version on Android devices, open Settings > About Phone (or About Device) > Android Version. Your version must be at least:

- Apple iOS 10.2+
- Android 6+

### Supported Adapters and Cables

	<p><b>MHD Black Wifi Adapter</b></p> <p><b>Details:</b></p> <p>The ultimate adapter for F/G Series and Supra! Faster and more reliable than K+DCan cables. <a href="#">Where to Purchase</a></p> <p><b>Vehicle Support:</b></p> <ul style="list-style-type: none"> <li>• All F Series BMW, G Series BMW, and Supra</li> </ul> <p><b>Mobile Device Support:</b></p> <ul style="list-style-type: none"> <li>• Android and iOS</li> </ul> <p><b>*ATTENTION:</b> this adapter cannot be used on E-Series cars!*</p>
	<p><b>MHD E-Series Wifi Adapter</b></p> <p><b>Details:</b></p> <p>Faster than regular K+DCan cable. <a href="#">Where to Purchase</a></p> <p><b>Vehicle Support:</b></p> <ul style="list-style-type: none"> <li>• All E Series BMW, compatible with F series (except B58), but not as fast as the F/G Series black adapter above.</li> </ul> <p><b>Mobile Device Support:</b></p> <ul style="list-style-type: none"> <li>• Android and iOS</li> </ul>

	<p><b>K+DCan Cable</b></p> <p><b>Details:</b></p> <p>This connection method for <b>Android</b> devices also requires an OTG adapter. We recommend the BimmerGeeks Pro or Expert Cable, as cheaper EBay / Amazon cables have 50/50 chance of working.</p> <p><b>Vehicle Support:</b></p> <ul style="list-style-type: none"> <li>• All E/F Series (except B58), but slower than both WiFi adapters</li> </ul> <p><b>Mobile Device Support:</b></p> <ul style="list-style-type: none"> <li>• <u><b>Android ONLY!</b></u> Devices must support “OTG.” Please research your device details to confirm.</li> </ul>
	<p><b>ENET Cable</b></p> <p><b>Details:</b></p> <p>This connection method for <b>iOS</b> devices also requires a lightning to ethernet adapter.</p> <p><b>Vehicle Support:</b></p> <ul style="list-style-type: none"> <li>• All F Series BMW, G Series BMW, and Supra</li> </ul> <p><b>Mobile Device Support:</b></p> <ul style="list-style-type: none"> <li>• <u><b>iOS ONLY!</b></u></li> </ul>

## Getting Started

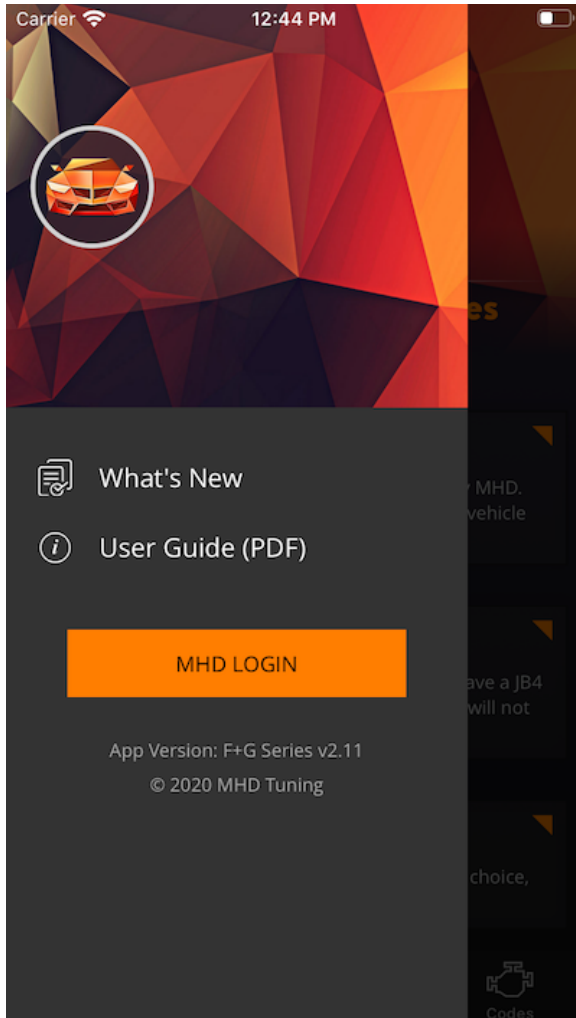
After downloading and installing MHD Flasher for your vehicle, the next step is to open the app and sign in. **Android Note:** the first time you launch the app you will see a permissions popup window which you must hit OK for (this grants MHD file permissions, which is required for saving logs and DME info, as well as loading custom tunes, etc).

If you are a new user, the login process is very straightforward and there is nothing you need to do prior. However, if you previously had MHD licenses and want to ensure they get transferred correctly, some preliminary steps for this will be detailed in the “Existing Licenses” sub section below.



## Logging In

The first time launching the MHD app, you will be greeted with the following screen. We automatically open the side navigation slide out for you to show that you should want to log in. If you accidentally close this slide out menu, you can open it again by clicking the “hamburger icon” in the top left corner of the app home screens. The icon looks like this: ☰

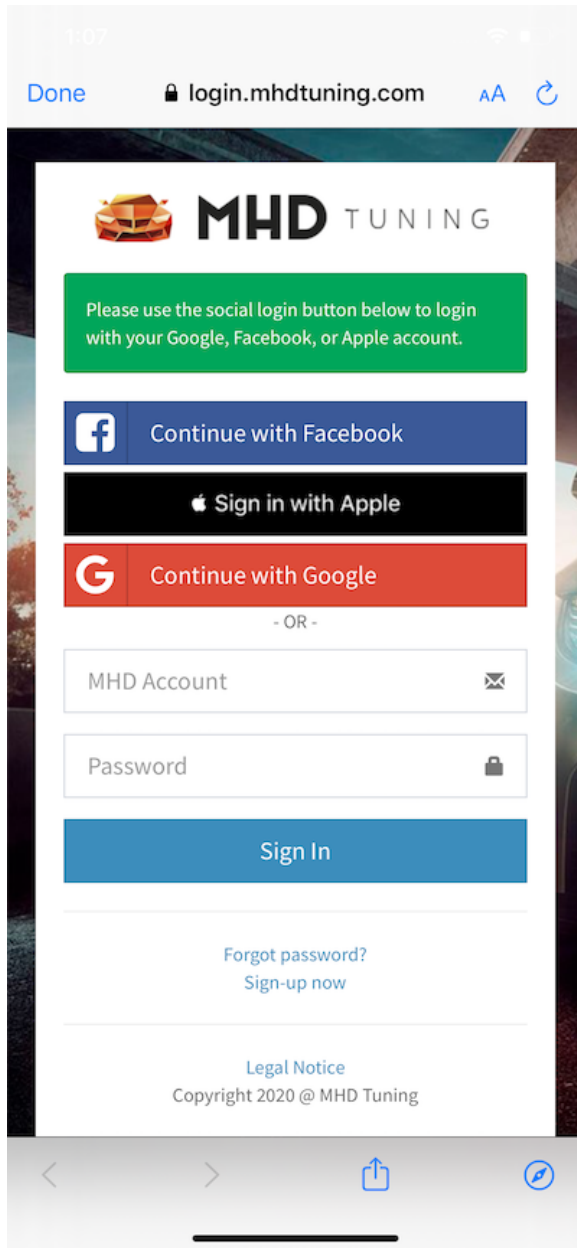


**Android Note:** Google Chrome is required to be installed and NOT deactivated on your device. Without it, the login process will not work correctly and you will be unable to log in. Please ensure it is installed and active before proceeding.

Make sure you are connected to the internet, and then click the MHD LOGIN button. Please read the text carefully in the popup prompt, and click OK to proceed to the browser window.

**Android Note:** If you have multiple browsers installed, your device should prompt you to choose which one you would like to proceed with. Make sure to select Google Chrome.

On the login screen, you will see a few different options. What you choose is entirely up to you, but there are some advantages to each. The choices can be broken into two groups:



### Social Login Options

These are the top three buttons you see: “Continue with Facebook”, “Sign in with Apple”, and “Continue with Google”. If you already use any of these services and do not want to have to create / remember another username and password combo, then you will want to choose this option.

### MHD Account

This is an **entirely new** account you will create on our servers. This login method is convenient if you wish to later share your login with a Pro-Tuner. To create an account, click the “Sign-up now” link at the bottom and follow the on screen instructions.

After completing the sign up form, you will get a confirmation email sent to the email address you used. You must open this email and click the “verify email” link before you will be able to log in with it.

**Android Note:** If you were a previous user of the old Android app, this is **NOT** the same as your Google login. Do not try to enter those credentials into these MHD Account textboxes as it will not work.

**ATTENTION:** All of your licenses will be tied to the login method you choose here, so please select carefully! If you log out and log back in with a different method, you will not see your licenses and may lose them!

After logging in, you will be taken back to the MHD app home screen, with a loading image indicating that your licenses are being updated. If you did not have any existing licenses, this should quickly close. If you did, you can see the progress as it transfers each license one by one to our new license server.

## Existing Licenses

If you previously used the old MHD Android app and your licenses did not transfer properly to our new license server (for use with the updated app), please follow these steps very closely on an Android device:

1. Uninstall MHD App
2. Go to Settings > Accounts and ensure there is only one Google account present
  - a. This Google account must be the one you originally purchased your MHD licenses with
  - b. Remove all other Google accounts
3. Long press on Play Store icon > Info > Storage > Clear Cache
4. Open the Play Store app, and ensure the Google account pictured in the search bar is the account you originally purchased your MHD licenses with
5. Install MHD App
6. Launch MHD App and login

## Cross Platform Licenses

Thanks to the switch over to our new custom license server, all of your MHD licenses will be accessible on any device you own, whether it be Android or iOS. Just make sure you login with the same method you used when initially setting up the new MHD app.



## Purchase New Licenses

All new license purchases are now done through our online webshop / store, available here:

[MHD Tuning](#) > Shop > then select the car series / engine you wish to purchase a license for.

This will land you on the "Super License" page for that engine / vehicle. The Super License includes ALL current individual licenses available for that engine / vehicle at a discounted price. If you do not wish to purchase the Super License, and instead are just looking for an individual product like Flasher, Logger, or a Map Pack, simply scroll to the bottom of the Super License page and click on the one you want. After adding all the items you want, proceed to the cart and purchase!

**ATTENTION:** Your license keys will be emailed to the email address you enter during checkout. Please ensure that you typed the email address correctly and that your mailbox is not full. There is also a chance the email you receive will go to the SPAM folder or PROMOTIONS on Gmail, so be sure to check those as well.

## Activate License Keys

In order to activate one of your newly purchased license keys, you must have connected at least once previously to your car so MHD can read your VIN. If you use MHD for multiple vehicles, make sure the last vehicle you connected to is the one you wish to activate the license key for. For more information on this process, see the section "Connecting to Car" below.

Your order confirmation email will contain a section at the top that looks like this. You must click the "License Key" button.

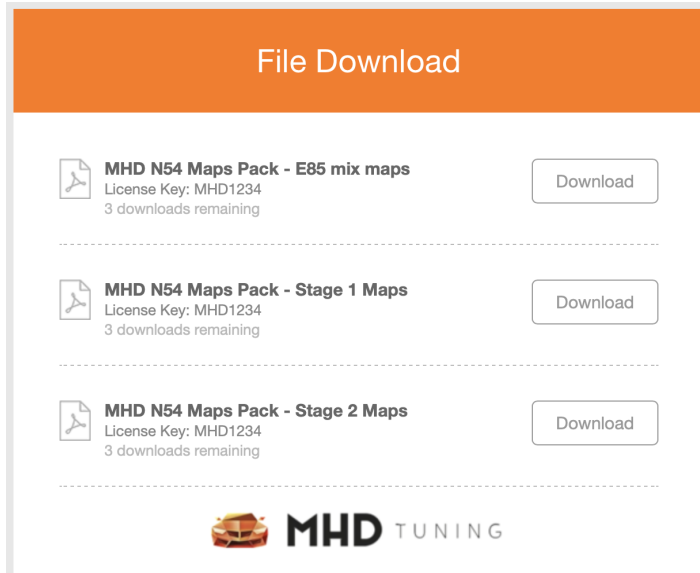
Thank you for your purchase!

License Key


View your order


or

Visit our store



After that, you will be taken to a new page that lists the License Keys from your purchase. In addition to showing each license key for the products you purchased, you are also able to download PDF copies of each for safe keeping. Be careful though, as each can only be downloaded a limited number of times.

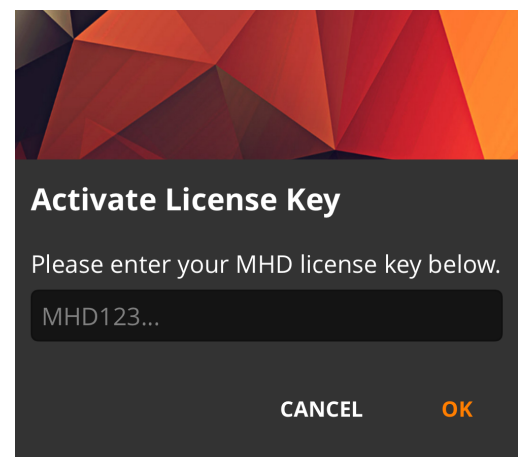
With the license keys in hand, you now will want to open MHD, make sure you are logged in, and click the  icon to expand the side menu.

Click on  **My Licenses** followed by “Activate License Key” once the My Licenses screen loads

You will see the following popup appear. Copy and paste or type your license key into this textbox and then press OK.

Success! Press OK to close the popup. The My Licenses page will refresh and you should then see the product added to the list of your license.

Repeat this process for however many products you purchased and have license keys for.



Once you have finished, you should see all of your licenses, grouped by vehicle VIN. If you have licenses for a vehicle of a different series (like E series N54), but have the F+G series app open, you will still see them all listed here.

## Connecting to Car

Due to the variety of connection options available to MHD app users, these instructions to connect to the car are broken down according to connection type. Sub sections for iOS or Android specifics are provided below where applicable.

Additionally, while it is recommended to always place your device in Airplane mode when flashing, if your device does have a cellular data plan and you wish to keep it active while data logging, we have provided steps that work on most common devices. We cannot possibly cover all particular devices though (especially Android), so if it does not work for your device you may need to research online or simply keep the device in Airplane mode when using MHD.

### WiFi Adapter (Orange or Black)

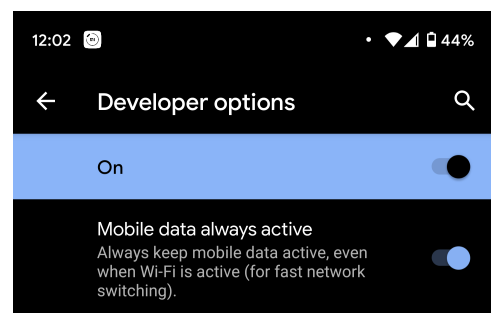
The connection process for our two different MHD WiFi adapters is the same, and it is also the same process for Android and iOS.

**Connecting:** first, plug in your MHD WiFi adapter to your vehicle's OBD-II port. Wait a few seconds, and then open your devices WiFi network list. Look for the WiFi network titled like "MHD\_xxxx" (if you have not changed the SSID), and tap it to connect. If using the Black F/G adapter, you will be prompted for a network password. The password can be found on the back label on the adapter.

Once you are connected to the MHD WiFi network, open MHD. You can confirm your connection by clicking the "Codes" tab, and then pressing the "Read DME Codes" button with the vehicle running or ignition on.

### Keeping Cellular Data - Android

Open your device Settings > About Phone. Scroll to the bottom and locate "Build Number." Tap on this quickly 7 times. This will cause a new menu option to appear called "Developer Options," at the main Settings page, usually near or above "About Phone." Other versions of Android hide it under Settings > System > Advanced >



Developer Options. Tap Developer Options, and scroll down until you see “Cellular Data Always Active,” and tap to enable this setting.

**ATTENTION:** Be careful using other developer options in that menu, as they can cause issues and unexpected behavior with the MHD app. We can recommend the “Cellular Data Always Active” option as the only safe option.

## Keeping Cellular Data - iOS



Open your device Settings > Wi-Fi > MHD\_xxxx Wi-Fi Network. You should see a screen like this. Please make note of your current IP Address, as we will use it in the next step.

Tap on “Configure IP.” You will see three possible selections at the top, from which you will Select “Manual.”

This will make the fields at the bottom editable. Enter the following in each of the fields:

- **IP Address:** enter your IP Address you made note of above
- **Subnet Mask:** 255.255.255.0
- **Router:** leave blank!

If you have entered all info correctly, it should look like this. Press save and then close the Settings app, and you are all set.

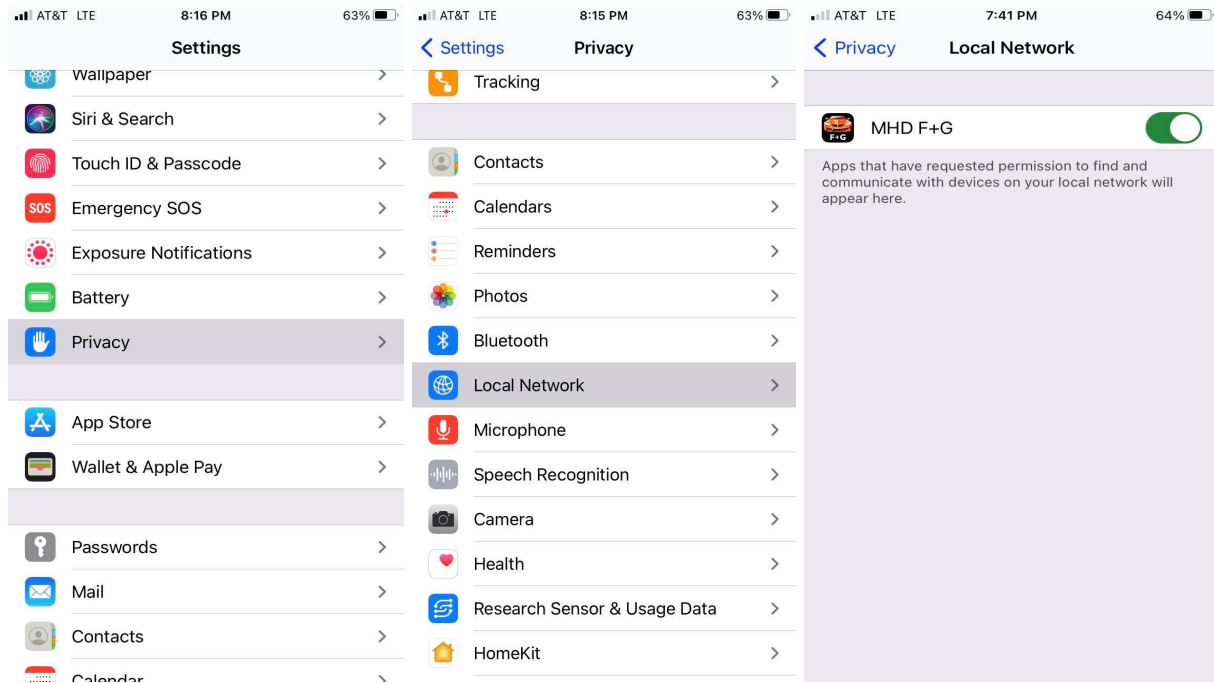
**ATTENTION:** If you are later (weeks later) unable to connect to your car or WiFi adapter, you may need to revert back to Automatic IP, get a new IP Address, then repeat these steps.





## Connection Permission with iOS 14 and up

Since iOS 14, It is necessary to grant the MHD app local network access permission, you can do this in Settings -> Privacy -> Local Network.

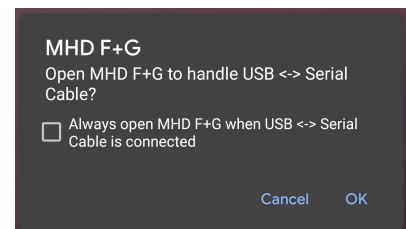


## K+DCan Cable

This connection method is **only compatible with Android devices**. In addition to the K+DCan cable, an OTG (on-the-go) adapter is also required. This adapts your device's Micro-USB or USB Type-C port to the full sized USB Type-A used on the K+DCan cable. Please make sure your specific Android device supports OTG.

**ATTENTION:** it is not uncommon for the OTG adapter piece itself to go bad, so if you rely on this connection method we recommend keeping an extra on hand.

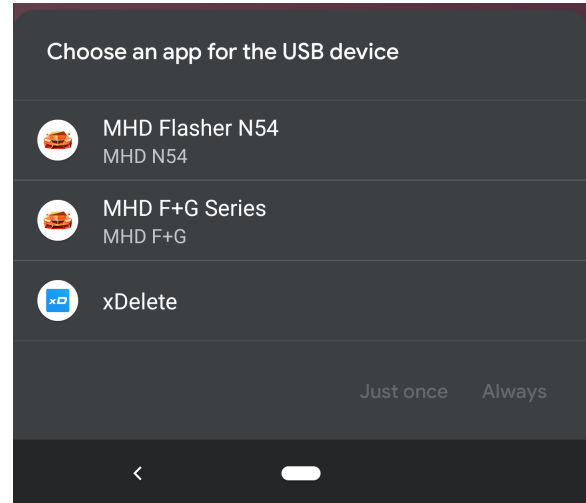
**Connecting:** simply plug the K+DCan cable into your vehicle's OBD-II port, the USB end into the OTG adapter, and then plug the OTG adapter into your phone. You should see the following popup appear (or it will skip immediately to opening an MHD app if you've previously set it to "Always open...")





If you have multiple apps installed that can use the K+DCan cable, then instead you will see a window appear that looks like this. You should **not** select “Always” in this scenario as it could cause issues with getting the cable to work with one of the other apps later.

After the app launches, you can confirm your connection by clicking the “Codes” tab, and then pressing the “Read DME Codes” button with the vehicle running or ignition on.



## ENET Cable

This connection method is **only compatible with iOS devices**. In addition to the ENET cable, a lightning to ethernet adapter is also required.

**Connecting:** first, plug the lightning adapter into your iOS device, and then the ethernet plug of your ENET cable into the adapter. Before connecting the OBD-II end to your vehicle, make sure to turn WiFi **off**, and also turn on airplane mode. Next, connect the OBD-II end to your vehicle, open iOS Settings > Ethernet and ensure you see an IP address. If not, make sure IP Configuration is set to “Automatic IP”.

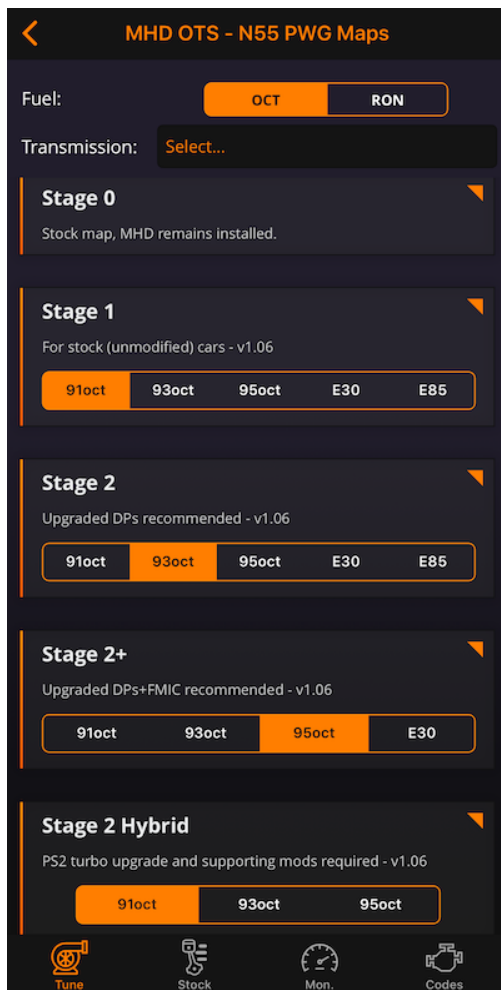
Open MHD, and you can confirm your connection by clicking the “Codes” tab, and then pressing the “Read DME Codes” button with the vehicle running or ignition on.

## Flashing your Car

At this point, you should be logged in to the app, have activated the appropriate licenses you will need, and have successfully tested your WiFi adapter or cable's connection to your car. You then have three possible options: flash one of our built-in OTS maps, work with a tuner of your choice and flash a custom map, or return your vehicle to stock (dealer service, selling car, etc). Each of these is detailed below.

### OTS Maps

To flash an OTS map, select the tab **Tune > Flash an MHD Map > Version** (if applicable). You will then see a screen like the following. There are a few important parts to this screen.

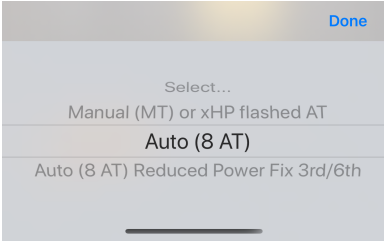
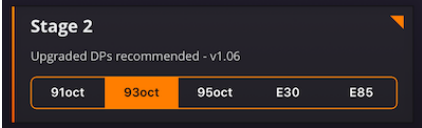


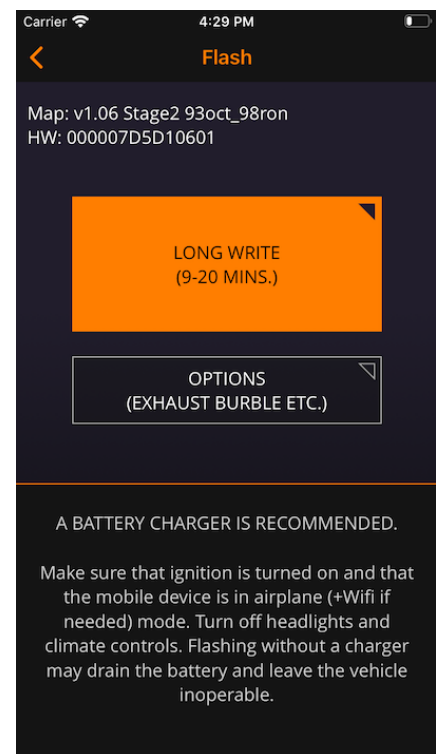
**NOTE:** the available OTS stages vary per vehicle / engine. If your modifications fall outside the common Stages, a custom tune may be necessary.

#### Navigating the OTS Maps Screen

- **Fuel:** this toggle simply switches the fuel ratings you see from the USA Octane scale to the RON scale.
  - **Transmission:** if visible, a selection is required. This will apply the appropriate torque scaling for your vehicle's transmission.
  - **Stage:** you should select the appropriate stage for the level of modification of your vehicle. The recommended mods for each are always listed underneath the stage name.
  - **Stage Fuel:** this bar is tappable separate from the Stage button itself. Use this to select the actual octane / RON fuel you will be using with the Stage map.
- NOTE:** available fuel options will vary between stages.

## OTS Maps Process Overview

1. At the top of the OTS Maps screen you should first set the **OCT/RON toggle** to the format you are used to.
2. Next, if the **Transmission** selection is visible, a choice is required (you will not be able to proceed past this screen without choosing one). Tap it and you will see a popup appear similar to this one. The available transmission options specific to the vehicle you are flashing, so your list may vary. This choice is remembered within MHD going forward.
 
3. Next, determine the correct **Stage** in the list per your vehicle's modifications. You must also own the Map Pack license for this Stage (or the Super License).
4. Now, in the **Stage Fuel** bar, tap the appropriate fuel type that you will be using in the vehicle. If you do not see a certain fuel (like full E85) available, it is likely because the OEM fuel system would not support it.
 
5. Next, tap the **Stage** button itself (anywhere outside the **Stage Fuel** bar works) to proceed to the next screen, the MHD Flash screen.
6. Once at the MHD Flash screen, you can either flash the map as-is, or tap **Options** to adjust the available **Flash Options** (these are detailed in their respective section below). There are three different flash lengths you will see:
  - a. **Full Write:** this is the longest initial write, which installs MHD for the first time. **NOTE: a battery charger is recommended for this! (if not using MHD Black Wifi adapter)**
  - b. **Long Write:** this is triggered when you are adding or removing a flash option that contains custom code / logic we have developed at MHD. It is shorter than a full write but depending on your connection, a battery charger is recommended.
  - c. **Map Write:** this is a very short write, like changing from Stage 1 to Stage 2, etc.

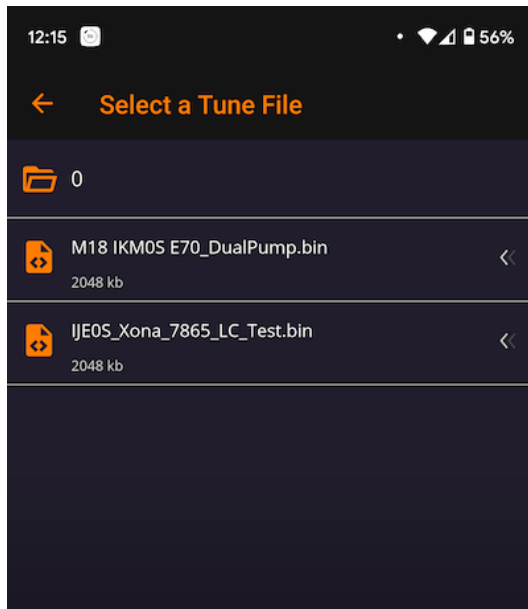


7. Once your flash options are configured, **PLEASE DOUBLE CHECK THE FOLLOWING:**
  - a. Ignition is in the “Ignition On”, but “Engine Off” state. To achieve this, press the engine start button without pressing the brake / clutch, until the dashboard shows the fuel level.
    - i. G-Series and later vehicles must press the “engine start” button 3x quickly to enter into diagnostic mode as displayed on the dashboard. Do not press the brake / clutch to ensure the car does not start.
  - b. All cabin accessories, climate controls, and headlights are turned off.
  - c. Battery charger is connected if doing a **Full** or **Long** write.
  - d. Device is in Airplane Mode + WiFi enabled! (if using WiFi adapter)
  - e. Ensure CarPlay is turned off completely. (iOS)
8. Tap the **Write** button and MHD will begin to flash the vehicle!
  - a. During this time, do not open the windows, do not open the doors, do not turn on anything else in the vehicle as it may interrupt the flashing process.
  - b. During this time, you may hear a series of chimes as well as the fuel pump running. You may also see a few iDrive error messages. Do not worry, as this is normal.
9. Once the map is flashed, MHD will put the car into “Normal Operation”, clear codes, and restore coding. After this, it will ask you to turn the ignition off.
10. Turn off ignition completely, remove key FOB from slot (if applicable), and wait a minimum of 30 seconds before starting the car! The “Service Car” icon may be illuminated for part of this, that is fine.

**Congratulations! You have just flashed your first MHD OTS Tune!**

## Custom Tunes

To flash an OTS map, select the tab **Tune > Flash a Custom Map**. You will then see a file select screen similar to below. The file select screen defaults to a specific location for Android and iOS. In order to make finding your custom map files easier, you should save them there for easy access.

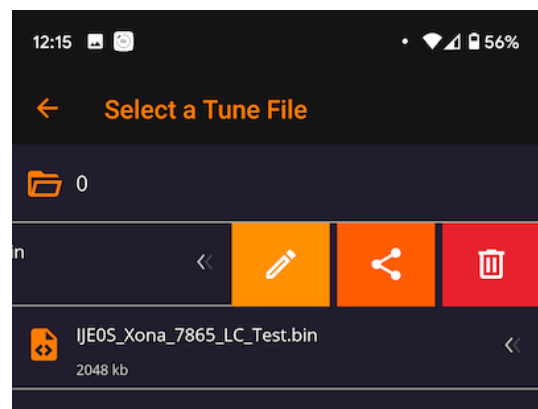


- **Android:** the file select screen opens at your device's **Download** folder. If you are transferring your files from PC via USB, or saving from an email attachment, you should save them there. Most Android OS also have a file browser app for moving files around on your device.

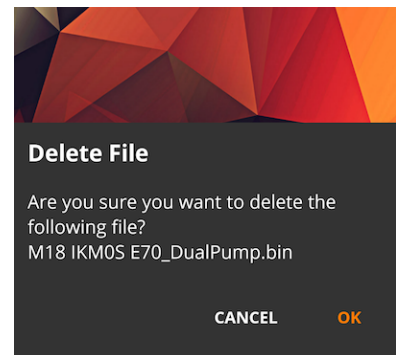
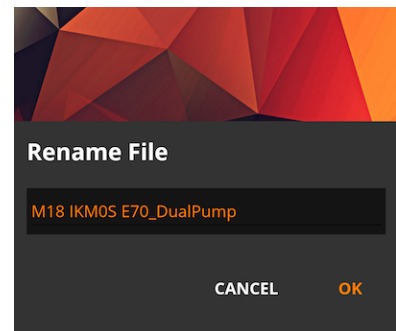
- **iOS:** the file select screen opens at the **MHD root folder** (you will see the debugging and datalogging sub folders). You can use the "Files" app that comes with iOS to move them to this folder, save them there directly from an email attachment, or if using the PC to transfer, the iTunes PC app.

On this screen, you can also << **swipe left** on any tune file (\*.bin or \*.mhd file extensions), and will be presented with some additional file options. From left to right, they are **Rename**, **Share**, and **Delete**.

Each option is detailed below.



- **Rename:** if you select the Pencil icon to rename your file, you will see a popup in which you can change the file name to something easier to remember, or add details about what was changed in the tune.
- **Share:** if you select the Share icon, you will see a popup asking what sharing method to use. For tune files, the only option is Email. If selected, this will open up your device's preferred email app with the tune file automatically attached.
- **Delete:** if you select the Trash Can icon, you will see a popup confirming if you would like to delete the tune file. Be careful, as this will permanently delete it from your device!



## Flash a Custom Tune Process Overview

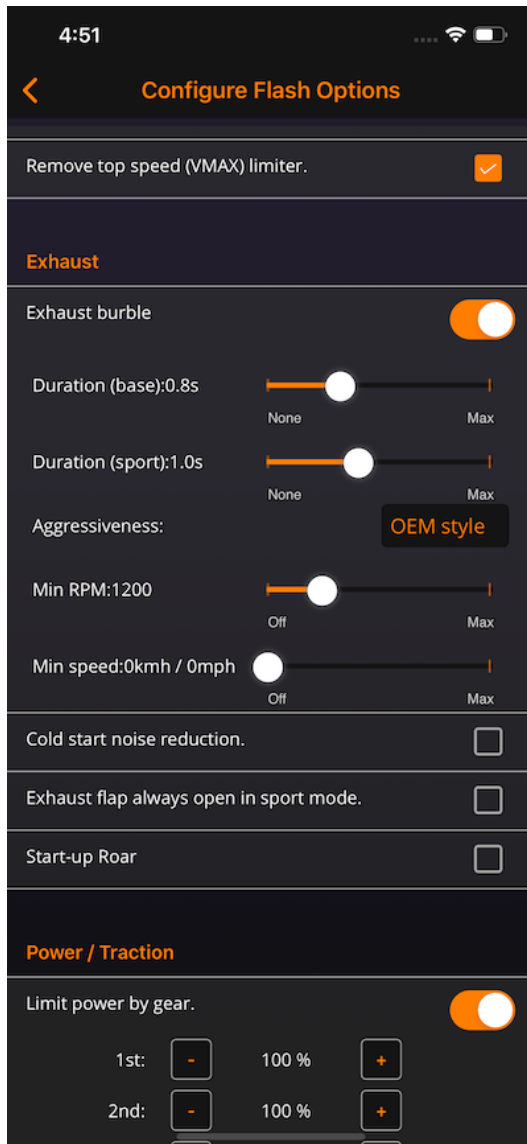
1. On the **File Select** screen detailed above, tap the tune file you would like to flash. This will take you to the next screen, the MHD Flash screen.
2. Once at the MHD Flash screen, you can either flash the map as-is, or tap **Options** to adjust the available **Flash Options** (these are detailed in their respective section below). There are three different flash lengths you will see:
  - a. **Full Write:** this is the longest initial write, which installs MHD for the first time.  
**NOTE: a battery charger is recommended for this! (if not using MHD Black Wifi Adapter)**

- b. **Long Write:** this is triggered when you are adding or removing a flash option that contains custom code / logic we have developed at MHD. It is shorter than a full write but depending on your connection, a battery charger is recommended.
  - c. **Map Write:** this is a very short write, like changing from Stage 1 to Stage 2, etc.
- 3. Once your flash options are configured, **PLEASE DOUBLE CHECK THE FOLLOWING:**
  - a. Ignition is in the "Ignition On", but "Engine Off" state. To achieve this, press the engine start button without pressing the brake / clutch, until the dashboard shows the fuel level.
    - i. G-Series and later vehicles must press the "engine start" button 3x quickly to enter into diagnostic mode as displayed on the dashboard. Do not press the brake / clutch to ensure the car does not start.
  - b. All cabin accessories, climate controls, and headlights are turned off.
  - c. Battery charger is connected if doing a **Full** or **Long** write.
  - d. Device is in Airplane Mode + WiFi enabled! (if using WiFi adapter)
  - e. Ensure CarPlay is turned off completely. (iOS)
- 4. Tap the **Write** button and MHD will begin to flash the vehicle!
  - a. During this time, do not open the windows, do not open the doors, do not turn on anything else in the vehicle as it may interrupt the flashing process.
  - b. During this time, you may hear a series of chimes as well as the fuel pump running. You may also see a few iDrive error messages. Do not worry, as this is normal.
- 5. Once the map is flashed, MHD will put the car into "Normal Operation", clear codes, and restore coding. After this, it will ask you to turn the ignition off.
- 6. Turn off ignition completely, remove key FOB from slot (if applicable), and wait a minimum of 30 seconds before starting the car! The "Service Car" icon may be illuminated for part of this, that is fine.

**Congratulations! You have just flashed your first Custom Tune!**

## Flash Options

MHD currently features a wide array of flash-time options that you are able to adjust to your liking. These can be applied to any map (OTS or custom). Below are details on each of the possible options. Check back often, as we are constantly adding to and improving these options!



The screenshot to the left shows a sample of some of the available flash options. These can be broken down into a few different categories based on the setting. Our terminology is as follows:

- **Checkbox:** this is a simple enable / disable of the flash option. See “Remove Top Speed” or “Start-up Roar” in the screenshot.
- **Toggle:** this toggles the flash option on, and then expands to show additional configuration options related to it. See “Exhaust Burble” or “Limit Power by Gear” in the screenshot.
- **Picker:** this functions similar to a dropdown list, in which a selection must be made from the possible options. See “Aggressiveness” within burble settings in the screenshot.
- **Slider:** this is used to set a value to your liking, keeping it within the defined minimum and maximum range. See “Duration (base)” or “Min RPM” within burble settings in the screenshot.
- **Stepper:** this is used to increase or decrease a value by a set increment with each button press. See “1st” and “2nd” gear with +/- buttons within power per gear settings in the screenshot.

**ATTENTION:** Not all flash options are available for all vehicles / engines. For flash option support for your specific engine / vehicle, please see the section titled “Flash Options - Engine Chart” located below the flash option descriptions.



## Linear Throttle

This flash option changes the throttle mapping to linear as opposed to the stock BMW pedal mapping which is set to give a false sense of torque (40% throttle = 80% of torque). Instead, 40% throttle = 40% torque with the linear mapping.

## Adjust Throttle Sensitivity

In stock form, all N54 except for the 1M contain a lag / signal filtering which gives a small delay from when you press the throttle until the DME starts acting upon your input. This flash option allows you to decrease or fully remove this delay, depending on your personal preference. To fully remove it, simply move the slider all the way to the right to the "More reactive (1M)" position. If you find that too touchy for your liking, try out a middle position on the slider. NOTE: this is different from "Linear Throttle," which changes the accel pedal % to throttle opening % mapping. Both can be used together, or individually to fit your preference.

## Minimum Idle RPM

This flash option raises the idle RPM of your vehicle. This is useful for 6MT cars with a SMFW (single mass flywheel), as it can reduce or eliminate the chatter.

## OEM Catted Downpipe(s)

This flash option should be selected if you still have the OEM downpipe(s) installed. It removes the logic to suppress the CEL so that the OBD readiness tests can run successfully.

## VMax Delete

This flash option removes the speed limiter (typically 155mph).

## Exhaust Burble Customization

This flash option delays the fuel cut-off when decelerating or free-revving to induce burbles and crackling in the exhaust. There are several possible customization options:

- **Duration (base):** changes the burble duration in efficient mode. If you don't want burbles in this mode, set to 0.
- **Duration (sport):** changes the burble duration in sport/sport+ and dsc off modes. If you don't want burbles in these modes, set to 0.
- **Aggressiveness:** changes how loud / aggressive the burbles are.
- **Minimum RPM:** changes the min RPM at which burbles will be active.
- **Maximum RPM:** changes the max RPM at which burbles will be active. (**note: not for N54**)
- **Minimum Speed:** changes the min speed at which burbles will be active. If you would like burbles in neutral / park, set to 0. (**note: not for N54**)
- **Maximum Speed:** changes the max speed at which burbles will be active. (**note: not for N54**)
- **Burble in Standstill:** N54 specific setting to enable / disable burbles when revving while the vehicle is stopped and in neutral, clutch-in, or in park.

Additionally, when flashing an MHD OTS MultiMap or custom mapswitch tune, we provide adjustable burble duration and aggression per map slot. This can be seen via Map 1 / 2 / 3 etc "tabs" at the bottom of the flash options screen. The number of tabs depends on the number of map slots setup in your tune (always 4 for OTS MultiMap).

## Cold Start Delete

This flash option prevents the initial ~45 second start-up process with raised idle and timing retard intended to quickly heat the catalytic converters. Select this option to reduce noise at start-up.

## Exhaust Flap Open In Sport

This flash option sets the exhaust flap to **always** be open in sport mode.

## Startup Roar

This flash option adds the initial RPM rev or "roar" like GTS cars upon starting.

## OPF Delete

This flash option suppresses the CEL for Euro cars that have switched to an aftermarket exhaust without the OPF filter.

## Boost per Gear

This flash option is now utilized for **ALL N54** powered cars. Use this to reduce power output in lower gears to help with traction. To use, take a log and note the current boost levels in the gears you wish to limit. Then use the flash option to reduce the boost value for that gear and retest until you are not spinning tires.

## Torque per Gear

This flash option uses a torque based strategy to reduce power output in lower gears to help with traction. 100% reflects **max power** available. Set it lower to reduce power.

## Kickdown Prevention

This flash option prevents the AT / DCT transmission from downshifting when pressing the accelerator pedal 100%.

## Shift Bog Fix (Tq Lim 2048 - hard limiter)

This flash option cures the 1-2 second power limitation when shifting fast on 6MT N54 cars, or when utilizing a higher than factory rev limit on AT / DCT N54 cars. This would commonly be seen in logs as Torque Lim 2048. This flash option also changes the RPM limiter from a “soft limiter” (throttle closure) to a “hard limiter” (fuel cut).

## 6MT Launch RPM

This flash option enables a standing rev limiter at a user defined RPM for when the clutch is pressed in at a stop. This helps to consistently launch your car at the same RPM. This should be combined with the Shift Bog Fix for best results.

## Rev Match Disable

This flash option allows you to disable the “rev match” feature per driving mode (eco/sport/sport+). This is useful for 6MT drivers that like to rev-match themselves.

## T-Map Sensor

This flash option provides support for users who have installed a 3.5 bar (N20) or 4 bar MAP sensor. These allow the DME to be able to read a wider range of boost pressures. It **DOES NOT** increase boost on its own.

### Ignition Coils

This flash option provides support for users who have installed a higher performance ignition coil kit, such as Precision Race, BimmerLife or Nexsys Motorsport.

### ADV O2 Sensors

This flash option provides support for users who have installed the ADV O2 sensors (typically used for N54 Single Turbo kits).

### XDI HPFP

This flash option provides support for users who have installed an XDI HPFP.

### Dorch HPFP

This flash option provides support for users who have installed a Dorch Engineering HPFP.

### Sport cooling mode for intercooler

This flash option runs the pump for W2A (water to air) intercooler cars more in order to improve cooling of IAT's, especially useful when sitting in the staging lanes waiting to race.

### Motiv FlexFuel Kit

Now that MHD+ is available for N54, the selection of the Motiv FlexFuel kit is done under the MHD+ Suite flash options. For OTS FlexFuel legacy users of this kit, you will want to select the **Motiv FlexFuel kit** from the ECA preset drop-down, and then check the FlexFuel checkbox that appears after the ECA selection has been made.

That additional FlexFuel checkbox will only be visible if you have all of the license requirements fulfilled and are flashing an appropriate OTS map. When selected, it will automatically blend your selected stage pump gas map with the related ethanol map and results in a fully featured **TRUE** flex fuel setup. See the Motiv installation guide for additional details.

**NOTE:** Custom tunes will not see the FlexFuel checkbox option, as it is not necessary, but they will be able to make an ECA preset selection.

### **Coolant Mode**

This flash option changes the oil and coolant temperature targets to give improved cooling during spirited driving or for use in hot climates.

### **PI Safety (coil cut)**

This flash option will cut power to an ignition coil if that cylinder's fuel injector is cut. This is necessary for a completely safe PI (port injection) setup.

### **Wastegate Rattle Fix**

This flash option changes the position of the wastegate arms during idle and deceleration in order to reduce the rattle noise they can have as they age.

### **Desensitize Knock Sensors**

This flash option is for professional use only. It should only be used after validating a built motor has false knock using det-cans or similar.

### **Flash Counter Reset / Freeze**

This flash option will reset your DME flash counter to 1, and also freeze it so that future flashes do not increment it any further.

### **Overrun BRAP**

This flash option will enable the BRAP sound on throttle lift (if sufficient boost has been built), exactly like the M2 N55 and S55 cars have from the factory. There are two options, short or long duration, which affect the length of the sound. An aftermarket exhaust is recommended for best sound. Full factory exhaust on some vehicles may be too quiet to hear the BRAP, especially on 5-series / 6-series vehicles and some SUV's.

### **MSA Disable**

This flash option allows you to disable the Automatic Motor Start/Stop function. It affects all drive modes.

## Flash Options - Engine Chart

	N54	N55-E	N55-F	S55	B58	B58o1	N13	S63	S58	-	-
<b>General</b>											
Linear Throttle	•	•	•								
Adjust Throttle Sensitivity	•										
Raise Minimum Idle RPM	•	•									
OEM Catted Downpipe	•	•	•	•	•	•	•	•	•		
VMax Delete (speed limiter)		•	•	•	•	•	•	•	•		
MSA Disable			•	•	•		•	•			
<b>Exhaust</b>											
Exhaust Burble Customization	•	•	•	•	•	•	•	•	•		
Cold Start Delete	•	•	•	•	•	•	•	•	•		
Exhaust Flap Open In Sport		•	•	•	•	•		•	•		
Startup Roar		•	•	•	•	•	•				
OPF Delete				•	•	•		•	•		
<b>Power / Traction</b>											
Boost per Gear	•										
Torque per Gear		•	•	•			•				
<b>Transmission</b>											
Kickdown Prevention	•	•									
Shift Bog Fix (hard limiter)	•										
6MT Launch RPM	•										
6MT Rev Match Enable			M2 N55	•	•						
<b>Hardware Support</b>											
T-Map Sensor	•	•	•	•							
Ignitions Coils	•	•	•	•							
ADV O2 Sensors	•										
XDI HPFP		Late E	•		•	•					
Dorch HPFP		Late E	•		•	•					
Nostrum HPFP			•								

Intercooler sport cooling mode					•	•					
	<b>N54</b>	<b>N55-E</b>	<b>N55-F</b>	<b>S55</b>	<b>B58</b>	<b>B58o1</b>	<b>N13</b>	<b>S63</b>	<b>S58</b>	-	-
Motiv FlexFuel Kit	•										
<b>Advanced</b>											
Coolant Mode	•	•	•		•		•				
PI Safety (coil cut)	•										
Wastegate Rattle Fix	•										
Desensitize Knock Sensors	•										
Flash Counter Reset / Freeze			•	•			•				
<b>MHD+ Suite</b>											
Antilag	•		•	•	•		•				
Map Switching	•		•	•	•		•				
Flex Fuel	•		•	•	•		•				
CANBUS ECA	•		•	•	•		•				
Overrun BRAP			•		•		•				

## Return to Stock

If you click the “Stock” tab, you will see three possible options.

### Flash Back to Stock

To flash back to stock, select the tab **Stock > Flash back to stock**. This option will uninstall MHD and completely revert your DME back to its original factory state. This can be useful if you wish to return your vehicle to stock before selling it, etc. An original backup file is not necessary for this process as MHD can intelligently generate one exactly for you based on unique identifiers in your DME.

**ATTENTION:** flashing back to stock requires a long write, so a battery charger is highly recommended!

### Flash Stage 0 (stock power)

There are two paths to access this function, either through **Stock > Flash stage 0**, or **Tune > Flash an MHD Map > Version** (if applicable) > **Stage 0**. Both paths through the MHD application will do the exact same thing.

With this flash option, the tune and power level will be exactly as it was stock, however MHD will remain installed so you are able to customize flash options if you wish. Additionally, you will be able to data log enhanced parameters specific to MHD. This is useful if you are trying to troubleshoot an issue but still want the enhanced logging abilities.

**NOTE:** if MHD is already installed and no flash option change triggers a **Long Write**, this flash should be a short **Map Write**. As with the above section’s instructions for OTS / Custom map flashes, you should use a battery charger if doing a **Long Write** or **Full Write** (first MHD install).

### Generate Updated Backup

To generate an updated backup, select the tab **Stock > Generate updated backup**. This option will create a \*.bin file in the MHD root folder which is exactly your OEM software. While this is not necessary for flashing back to stock, it can be useful if you or your tuner needs an original file to start from for your custom tuning.

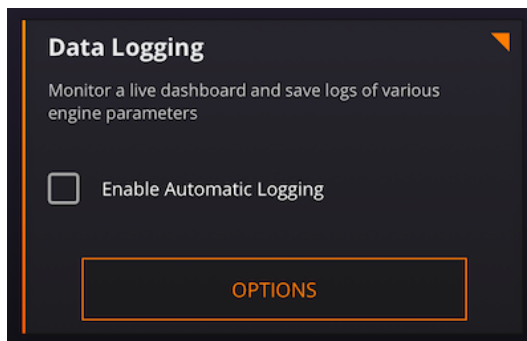


## Data Logging

MHD features comprehensive logging / monitoring abilities. It can be used to keep a close eye on the condition of your vehicle, the quality of the tune being used, and much more. MHD includes a vast list of loggable parameters, and the list is constantly expanding as we add more valuable parameters for helping calibrate the perfect tunes.

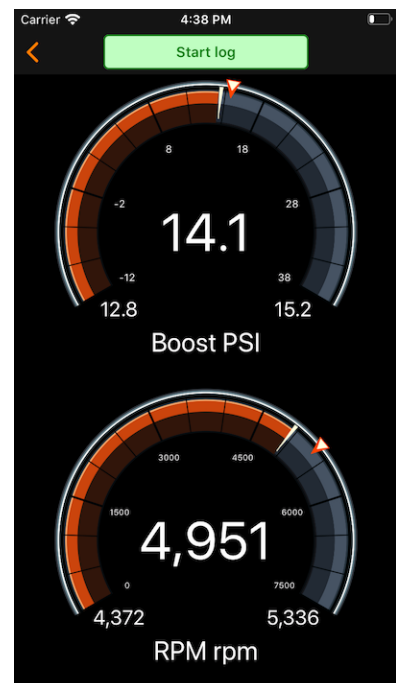
After connecting to your vehicle, you can access the data logging screen by selecting the tab **Mon > Data Logging**.

You are able to constantly monitor up to 8 “live gauges” on your device while data logging many many more to a CSV file saved on your device. By default, you have manual control over data



logging to file start/stop. If you do not want to manually start / stop the logging and would rather it start automatically, tick the checkbox for “Enable Automatic Logging.” In this mode, the data logging to file is automatically started once the accelerator pedal is pressed past a user defined threshold. This percentage is set on the **Monitor Options** screen, detailed in its section below.

After tapping the **Data Logging** button, you will see a screen like this. There will be anywhere from 1-8 gauges present, depending on how many you configured in **Monitor Options**. You will either see the start button if using manual logging, or the **Ready** button if you ticked the box to enable automatic logging. This simply indicates auto logging mode is active and ready for recording to file once your pedal threshold is met.



## Gauge Interaction

There are a few ways to interact with the individual gauges while the monitoring screen is displayed. Currently you can change the gauge parameter and also reset the displayed minimum / maximum. The setting to show or hide the gauge minimum / maximum is configurable on the **Monitor Options** screen.



### Changing Gauge Parameter

To change the parameter that is being displayed by a gauge, simply tap once on the gauge itself. You will see a popup like this. Simply tap the new parameter you would like the gauge to display. If you decide not to change the parameter, press **Close** instead.

**NOTE:** If when selecting a new parameter you receive an alert that the maximum number of parameters has been reached, you must go to the **Monitor Options** screen and deselect a few from the parameter checkbox list that you do not need.

### Reset Min/Max Display

If you would like to reset the displayed min/max that has been recorded while the gauge has been active, you can simply **swipe up or down** on the gauge face itself.

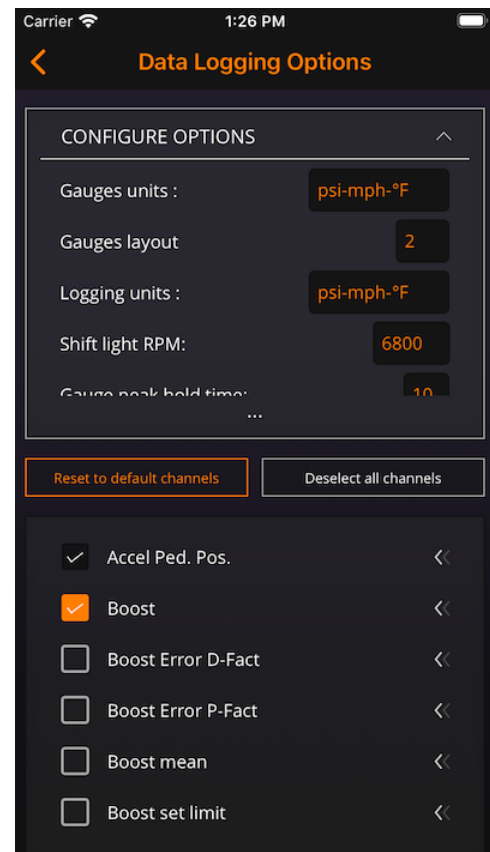
### Changing Gauge Style / Appearance

This functionality is coming soon! Please check back for a future update.

## Monitor Options

Before you can view and edit the Monitor Options screen, you must either be currently connected to your vehicle, or have connected to it at least once before. You can access the Monitor Options screen by selecting the tab **Mon > Options**. Once the screen loads, you will notice the top section titled **Configure Options**. This is an expand/collapse area. Tap it once to expand, and you can tap it again (on the Configure Options header text) to close. When expanded, you can scroll through more options within that area. Once expanded, you can configure the following options:

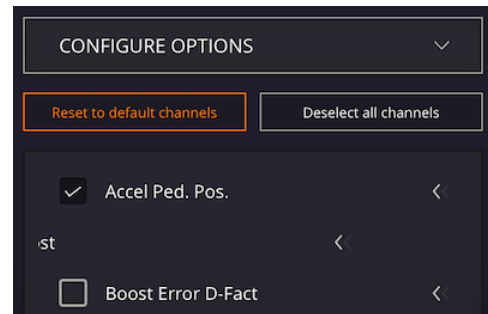
- **Gauge units:** changes the units used for the values displayed on the gauges
- **Gauges layout:** changes the numbered of gauges shown when monitoring
- **Logging units:** changes the units used for the values recorded to CSV data logs
- **Shift light RPM:** the RPM at which the screen will flash white, indicating
- **Gauge peak hold time:** a timer for how long the “triangle” pointer on the sport style gauges will remain at the peak value
- **Min pedal for alerts:** accel pedal position threshold that must be exceeded for gauge alerts to be active
- **Play alert beep:** will play an audible beep when a gauge alert threshold is exceeded (in addition to gauge turning red)
- **Show overall min/max:** will show the persistent min/max of a gauge parameter in the lower corners of the gauge



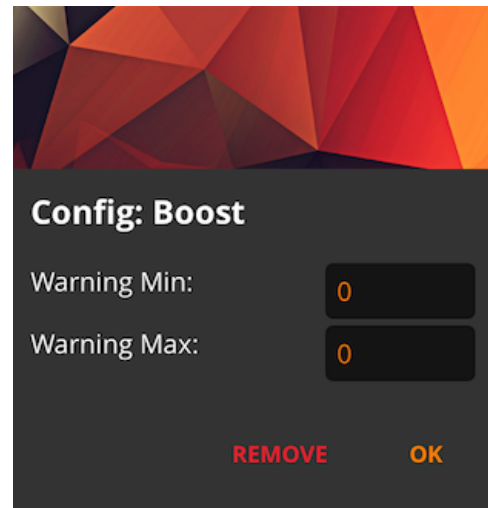
Below the Configure Options section are two buttons which apply to the parameter list at the bottom of the screen. They will reset the list to its default selections, or deselect all parameters. You can also select or deselect parameters manually, up to an engine-specific maximum.

## Gauge Alerts

1. To set up a gauge alert for a specific parameter, << **swipe left** on the name of the parameter in the Monitor Options param list. This can be seen here on the Boost parameter.



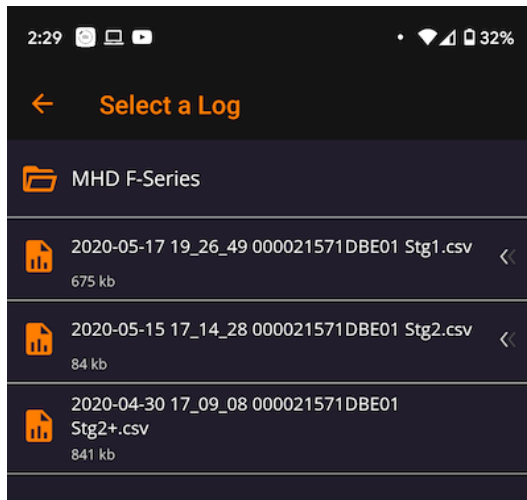
2. You will then see a popup like this appear. Enter the values you wish to be your min and max for alerts, then press OK. If you press Remove, the alert for this parameter will be removed and both fields set back to 0 (no alert).
  - a. If you do not want an alert on the Min (boost, for example), enter a very low value.
  - b. If you do not want an alert on the Max (rail pressure, for example), enter a very high value.



3. In this example, we entered for Boost: -50 Min and 30 Max. This will prevent an alert when in decel and Boost param is reading vacuum, but it will give an alert when Boost exceeds 30 (psi in this case, units depend on your configured Gauge Units from above).



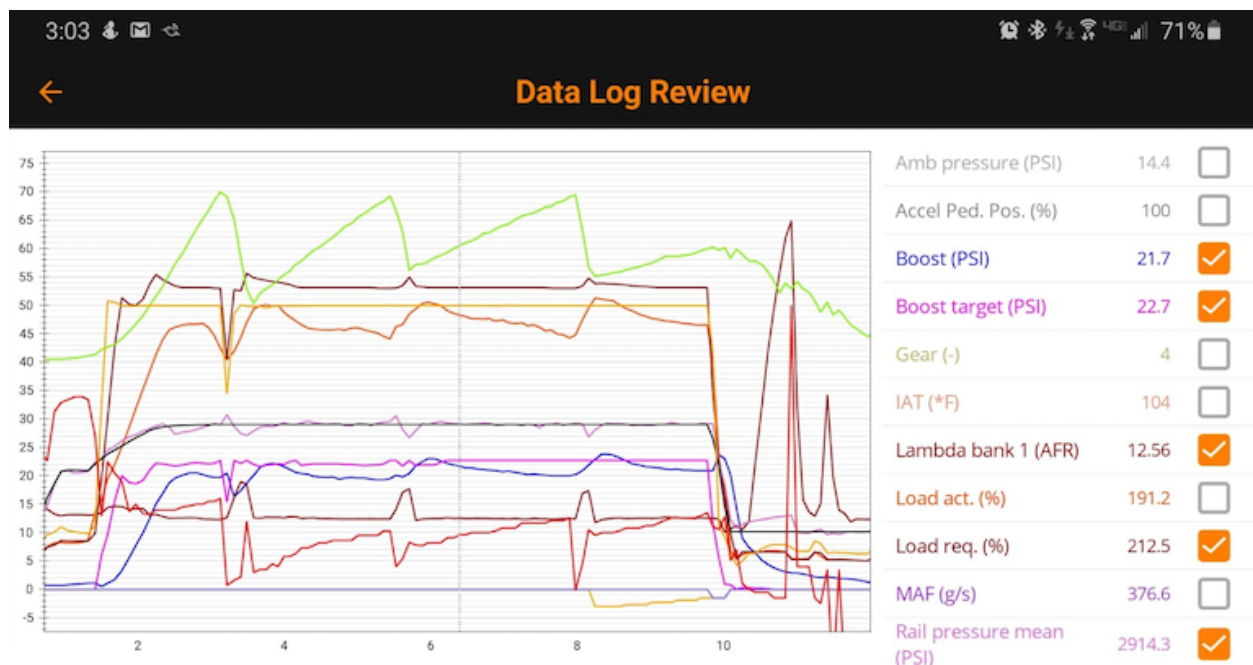
## Graph a Log



To graph a log you have previously saved, select the tab **Mon > Graph a Log**. You will then see a file select screen similar to this. This file select screen defaults to the MHD DataLogging folder, which is where the CSV log files are saved.

Tapping on a log file will bring you to the graph view of your log. On this screen, you can view the graph in either portrait or landscape view.

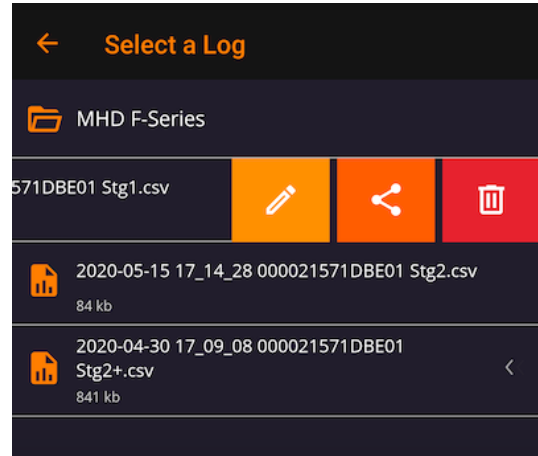
You can also show or hide additional parameters by toggling the checkbox next to the parameter name. Finally, you can scroll up and down, pan side to side, and zoom in on the graph itself. Panning the graph side to side will update the values on the parameter list with their value at that given point in time!



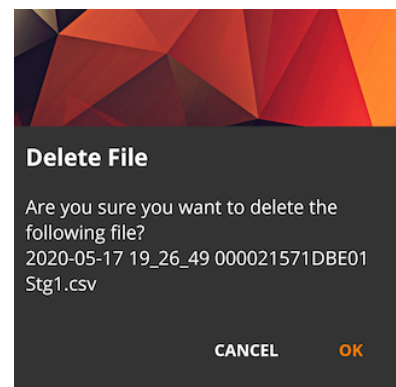
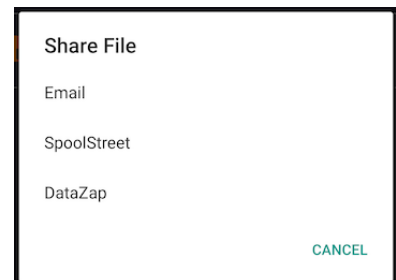
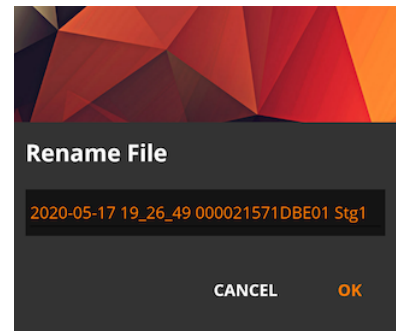
## CSV File Actions

On the log file select screen, you can also << **swipe left** on any log file (\*.csv file extension), and will be presented with some additional file options. From left to right, they are **Rename**, **Share**, and **Delete**.

Each option is detailed below.

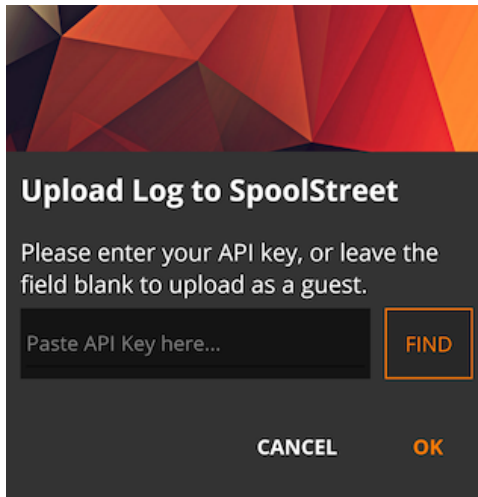


- Rename:** if you select the Pencil icon to rename your log file, you will see a popup in which you can change the file name to something easier to remember, or add details about something specific you noticed while taking the log.
- Share:** if you select the Share icon, you will see a popup asking what sharing method to use. For log files, the options are Email, SpoolStreet, and DataZap. If Email is selected, this will open up your device's preferred email app with the tune file automatically attached. SpoolStreet is detailed in its own section below. DataZap direct upload is coming soon (as soon as they have it available for us).
- Delete:** if you select the Trash Can icon, you will see a popup confirming if you would like to delete the log file. Be careful, as this will permanently delete it from your device!




## Share to SpoolStreet

After selecting the SpoolStreet option in the Share dialog above, you will be presented with this popup. If you are a member of the SpoolStreet forum or wish to sign up (visit <https://www.spoolstreet.com>), you can get your own API key (lookup using the **FIND** button).



Leaving the API Key field blank will still allow you to upload the log as a guest, but the log will not be guaranteed to be hosted forever. If you would like permanent storage of your logs, you should sign up and enter your user specific API Key into the textbox.

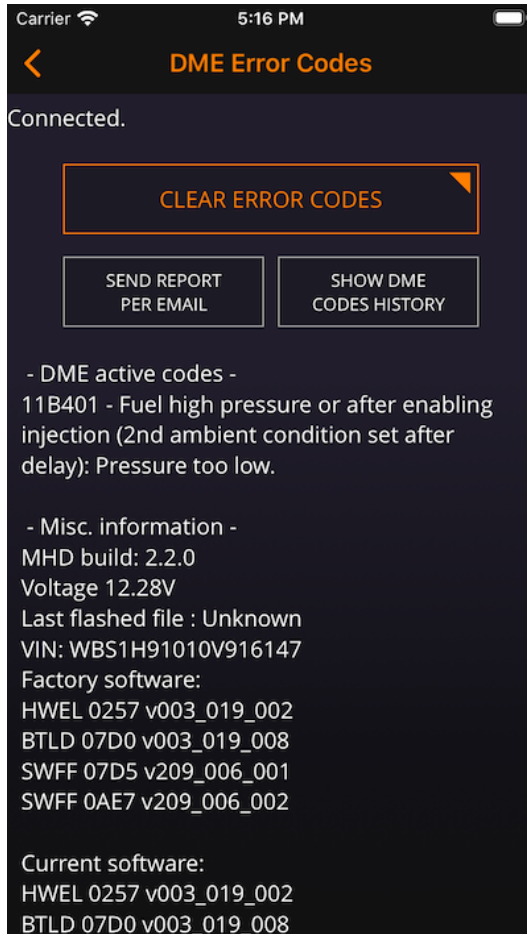
Clicking **OK** will begin to upload the log. Once the upload is complete, you will see the following success message in the popup. You can click the link to open your device's browser and view your log on the website, or you can press **Copy Link** to copy it to your device's clipboard for later use.





## Read DME Codes

In order to read DME codes, you first must connect to your car. Next select the tab **Codes** > **Read DME Codes**. This will query the DME for a variety of information, including:



- active error codes
- software versions (current and factory OEM)
- VIN
- MHD information
- battery voltage
- ecu status
- OBD readiness information
- flash counter (available on F series and later)

To clear the error codes, press **Clear Error Codes**.

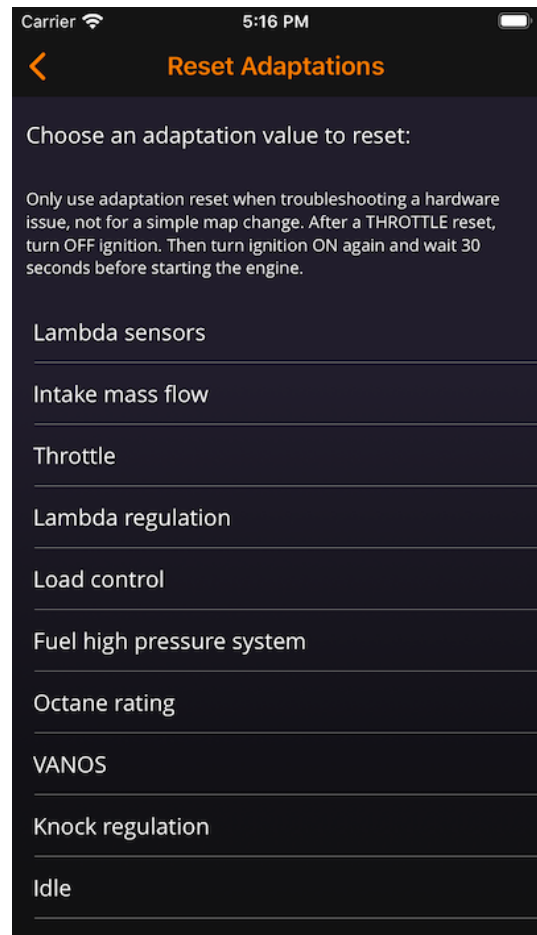
Other actions on this screen include sharing this screen's details via email (to yourself or your tuner), and also viewing DME code history. This is an aggregate list of error codes stored on your device each time you visit the Read DME Codes screen. It is useful to see if you have a history of a troublesome code continuing to pop up from time to time.



## Reset Adaptations

In order to reset DME adaptations, you first must connect to your car. Next select the tab **Codes** > **Reset Adaptations**. Adaptation resets should only be performed if you are troubleshooting a particular issue and you want to eliminate a learned behavior / value from the list of possible causes. The following adaptations can be reset:

- Lambda sensors
- Intake mass flow
- Throttle: after reset, turn ignition off and then back on, wait for 30 seconds before starting the engine!
- Lambda regulation (learned lambda/ltft)
- Load control
- HPFP system
- Octane rating
- VANOS
- Knock regulation (learned knock control)
- Idle
- Register Battery (only if new battery is same size / type as previous)



**NOTE:** when resetting adaptations, ensure the engine remains off but ignition is on.

## MHD+ Suite

MHD+ is the overall encompassing name of our suite of custom features we have added to the DME in order to improve and expand upon its functionality. Currently we offer MHD+ support for the following vehicles:

- **E-Series (MSD8x DME):** N54
- **F-Series (MEVD DME):** N13, N55 (PWG and EWG), S55
- **F/G-Series (MG1 DME):** B58 gen1

Our main custom **MHD+** features include Antilag, Map Switching, and FlexFuel. Information on how to use each feature (and what is required) can be found in their respective sections below.

### Antilag

Antilag can be baked into your custom tuned file by your tuner, or you can use our built-in Antilag **flash time option** with an OTS map or a custom tuned file. Here are step-by-step instructions on how to best use the feature!

#### Rolling Start

1. Ensure the vehicle is up to operating temperature.
  - a. **E-Series** also requires DSC one press off or fully off.
2. Select the appropriate gear for your given speed / racing condition.
  - a. For AT or DCT transmissions, make sure you are in manual mode so that it does not kick down to a lower gear.
3. **E-Series:** pull cruise control stalk in **TOWARD** you, or hold steering wheel **VOL DOWN**  
**F/G-Series:** hold either the cruise control **RES** button, or the cruise control **DOWN** rocker switch (both first and second indent work)
  - a. **NOTE:** some early F/G-Series 5/6 series cars are limited to only using cruise control **DOWN** rocker switch to active antilag.
4. While continuing to hold the button, gradually fully depress the accelerator pedal.
5. Wait 1-2 seconds for boost to build and then release the **button / stalk!**

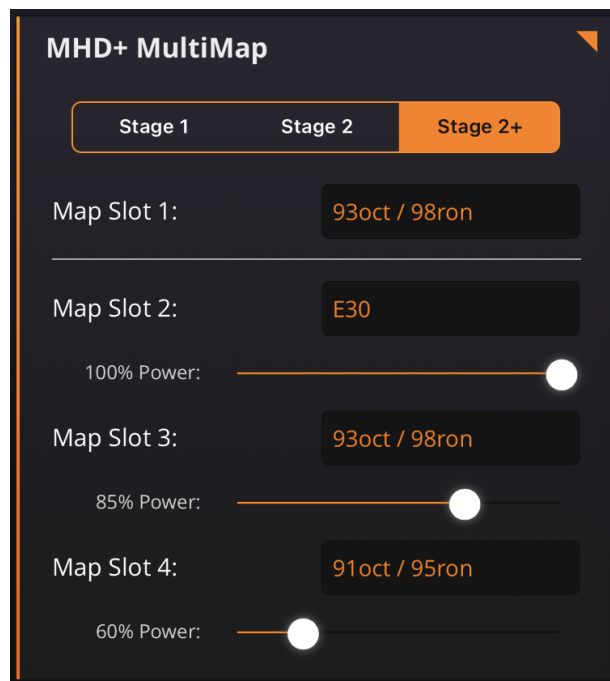
## DCT Launch Control Start

1. Ensure the vehicle is up to operating temperature.
2. Engage LC like you normally would.
3. Once RPMs rise, press and hold either the cruise control **RES** button or **DOWN** rocker switch (both first and second indent work) on F/G-Series, or on E-Series, pull the cruise control stalk in **TOWARD** you, or hold the steering wheel **VOL DOWN** button.
4. Wait 1-2 seconds for boost to build and then release the **button / stalk** at the same time you release the brake pedal to launch.

## Map Switching

Map switching can be added to custom tunes by your tuner, or configured using our new OTS MultiMap capability. This allows you to have up to 4 switchable maps that can be changed on the fly in a few seconds without having to reflash the vehicle! This allows you to quickly change between a daily map, race gas map, FlexFuel map (see below section) etc.

For OTS map switching, on the stage / octane selection screen you will see the following new MultiMap section we've added:



First select which stage of modification is appropriate for your vehicle. Then you are free to select whichever octane variants you would like per map slot.

In addition to the octane selections, you can also use the slider to reduce the HP that each map will make. This is very useful if you would like to make your own valet map, lower power map for cruising, etc.

**NOTE:** If you plan on using FlexFuel (on the flash options screen, details in the FlexFuel section below), all map slots should be filled with non-ethanol, pump gas selections.

## Instructions

First, ensure your current tune has been set up for map switching, or you have flashed an OTS MultiMap. Map switching is then performed in the car by the following steps:

- **E-Series:** press and hold the **TIP** button on the cruise control stalk for 2 seconds, or pressing **VOL DOWN** and **CH DOWN** on the wheel at the same time.
- **F/G-Series:** press and hold either the cruise control **SET/LIM** button or the **BC** button for 2 seconds.

You will see the RPM needle jump to whichever map slot number you have currently selected and the CEL will start blinking slowly.

Now to adjust the desired map selection you will:

- **E-Series:** use the cruise control stalk **UP/DOWN**, or **CH UP/DOWN** on the wheel
- **F/G-Series:** use the cruise control **UP/DOWN** rocker

To apply the selection (after which RPM needle will return to normal operation and the CEL will stop blinking):

- **E-Series:** press and hold the **TIP** button on the cruise control stalk for 2 seconds, or pressing **VOL DOWN**.
- **F/G-Series:** press and hold either the cruise control **SET/LIM** button or the **BC** button for 2 seconds.

## General Info

- You can switch maps on the fly at any time: car running, driving, etc
- Your currently selected map is saved when the car is shut off and will be restored the next time you start the car.
- Reflashing the car will reset the currently selected map back to slot 1.
- The currently selected map can be logged via our new **Current Map** parameter.

## FlexFuel

FlexFuel can be added to custom tunes by your tuner, or added as a flash option for a valid OTS MultiMap (or single map on N54). This allows your tune to automatically adjust for any given Ethanol content mix / blend you fill the car with. It is a true “set it and forget it” setup!

For OTS FlexFuel, you must first ensure you meet the requirements below. Next, you will want to select and config a MultiMap tune (see details in section above). For FlexFuel, you should **not** select an ethanol map in any map slot, as the ethanol blending is handled automatically with our code. When you get to the flash options screen, make your ECA (ethanol content analyzer) selection. You will see another checkbox option appear below it for FlexFuel. Check that and then flash your map. Your car will now automatically adjust its tune based on the actual ethanol content in your tank!

### Requirements

- CANBUS based Ethanol Content Analyzer (ECA) Kit
  - We recommend our [MHD Quick Install ECA](#)
- N54 **also** supports the traditional Motiv DMTL Wired ECA kit
- MHD Monitor License (in addition to Flasher license)
- OTS pump gas map and E85 map pack licenses (if not custom tuned)

### Useful Logging Parameters

- **Ethanol Content (CAN)** - this is the ethanol content that is being sent to the DME from your installed CANBUS ECA kit.
- **Ethanol Content (Active)** - this is the ethanol content that is currently being used in our custom DME calculations. It will typically be equal to **Ethanol Content (CAN)** unless your tuner is overriding the sensor value intentionally.
- **Ethanol Content (Wired)** - this is the ethanol content that is being sent to the DME from your installed Motiv DMTL Wired ECA kit on N54
- **Fuel / Load / Timing / Knock Interpolation** - these values show you how the individual categories are being blended between your pump gas and ethanol calibrations.

## MHD+ Menu System

On supported MHD+ platforms (currently F/G-Series), entering into “mapswitch” mode is not **only just for mapswitch**. It is actually a more advanced **paged** menu system, with 3 different “pages” as of current release. You enter into the menu system the same way you did mapswitch (**F/G-Series**: press and hold either the cruise control **SET/LIM** button or the **BC** button for 2 seconds). You will always enter on “page 1”, which is designed by a pattern of one CEL blink at a time.

To change pages, quickly press the **SET/LIM** button or the **BC** button. The current page is always indicated by the blink pattern of 1 / 2 / 3 blinks in a row. To exit the menu, press and hold again like you did to enter. Page details are as follows:

### Page 1 - Mapswitch

This is the normal map switch you are used to. **UP/DOWN** on the cruise control rocker will move the RPM tach to your desired map selection. If you only have 1 active map slot, you will not be able to move the tach from 1000 rpm. You will still have access to page 2 and 3 though.

### Page 2 - Exhaust Flap Control

Page 2 allows you to control your vehicle’s exhaust flap on the fly. There are three settings you can switch between (again using the UP/DOWN rocker).

- 0 rpm = OEM exhaust flap control, no forced override
- 1000 rpm = exhaust flap always forced open
- 2000 rpm = exhaust flap forced closed (**note**: this will only apply up until a certain load threshold for safety)

### Page 3 - Ethanol Content Quick View

Page 3 will show the current Ethanol percentage of your fuel (when using an appropriate CANBUS ECA kit). 1000rpm = 10% Ethanol, up to 7500 rpm = 75% ethanol. If you need to see E% greater than that, you should log it or place it on an MHD Monitor gauge.

## MHD Backend Flash + JB4 Flowchart

For specific information on stacking an MHD BEF with your JB4, please check the following BMS forum links for your specific platform / engine:

- **N54:** <https://n54tech.com/forums/showthread.php?t=29236>
- **N55-E:** <https://n54tech.com/forums/showthread.php?t=43151>
- **N55-F:** <https://n54tech.com/forums/showthread.php?t=51166>
- **B58:** <https://n54tech.com/forums/showthread.php?t=57432>
- **//M Models:** <https://n54tech.com/forums/showthread.php?t=54795>

## FAQ

### Q. Can I test the connection before making a purchase?

- A. Yes, you can test the connection by either going to the tab **Codes > Read DME Codes**, or by opening the side menu and pressing **My Licenses** and verifying you see your VIN in the top bar.

### Q. Can I tune different cars with one license?

- A. No, each license is tied specifically to a vehicle (VIN + your login method). Tuning a different car requires purchasing new license(s).

### Q. Can I tune multiple cars with one login account?

- A. Yes, you can tune as many vehicles as you like with one login account. There is no limit to the number of vehicles tied to one account.

### Q. Can I transfer my licenses?

- A. No, licenses are tied to your login account and VIN. They cannot be transferred to a new login account or new vehicle.

**Q. Is a battery charger required?**

- A. A battery charger is highly recommended for **Full Write** (initial MHD install / uninstall). It is also recommended **Long Write** (logic change) depending on your adapter speed. A healthy battery will handle **Map Write** fine but a battery charger may still be needed if flashing using a K+DCan cable.

**Q. How do I take good data logs?**

- A. Press the tab **Mon > Data Logging** (ensure auto logging is checked). Stabilize around 2500 rpm / 3rd gear (4th on 8 speed AT) with DSC fully off. Quickly press the throttle to the floor, shift at 6500rpm and 2-3 seconds after the shift release the throttle. Slow down, stop the monitor. If you want us to review your log, then upload the log to SpoolStreet using the in-app functionality or upload manually to [www.datazap.me](http://www.datazap.me) and send us the link.

**Q. I'm about to flash my car with an OTS or custom tune. What should I do before flashing?**

- A. Recommended upgrades include replacing spark plugs and ignition coils if they are old / worn (10k miles for plugs, 30k miles for coils). If you bought the car used and it has decent mileage and don't know if they were changed or not, we recommend changing them for peace of mind.

**Q. I don't have an FMIC installed on my car yet, is it safe to run one of the FMIC maps?**

- A. Yes, you can run one of the FMIC OTS maps, but it is recommended that you datalog, ensure the car is not knocking, and that the IAT's and fueling remain healthy. We advise against using "one stage / step up" OTS Maps on cars without the recommended parts if using for track days and sustained aggressive driving. **USE AT YOUR OWN RISK. MHD is not responsible for any damage done to your car using OTS Maps intended for modified vehicles without the recommended upgrades.**

**Q. Do I lose my licenses if I delete the app or the Mobile device breaks?**

- A. No, the licenses are stored on our server and will always be linked to your login. You can access your licenses on any Android or iOS device by using the same login.



## Revision History

Version	Notes	Date	Updated By
8.0	Initial creation of new user guide for 2.x apps	6/14/2020	Jake Y
8.01	Added details for new burble customization options	6/29/2020	Jake Y
8.02	Added S63 Supported list, iOS14 connection permission.	10/23/2020	Levan
8.10	Added MHD+ feature information, flash options	6/16/2021	Jake Y
8.11	Added N54 flash option "Adjust Throttle Sensitivity" information	9/27/2021	Jake Y
8.12	Removed B58 support for CAN WIFI/Cable	1/07/2022	Levan
8.20	Expanded MHD+ information for all supported E/F/G vehicles	6/29/2022	Jake Y
8.21	Android Version 6, S58 Section	7/27	Levan