Getting Started

Instruction Guide for setting up and using BlueFire Apps and your Adapter for App Version 10+

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The Data Adapter

The BlueFire Data Adapter is an electronic device that connects to your vehicle's on-board computers (ECMs) and transmits information wirelessly to BlueFire Apps. The Adapter is constructed of industrial grade materials, will withstand abuse, and is weather resistant.

You can purchase your Adapter from our Store at https://bluefire-llc.com/store.

Vehicle ECMs

Your vehicle is equipped with numerous computers (called ECMs) that transmit on a network called a data bus (J1939, J1708, or OBDII). The Adapter communicates with the following ECMs but has the capability to support others:

- Engine
- Cab (Body)
- Instrument Panel
- ABS Brakes
- Transmission

The Adapter only receives data that the ECMs transmit. If the ECMs are not programmed to transmit the data then the App cannot show it and will return a value of NA. Some sensors of the vehicle may also be mechanical or hydraulic and not connected to an ECM in which case the App will show NA.

To check what data the ECMs are transmitting, use the Drive and Repair pages of the App. If the values show NA then the ECMs are not transmitting the data.

Adapter Styles

There are two styles of Adapters:

- Bluetooth Low Energy (BLE) Adapters that support Apple, Android and Windows. These have a square Bluetooth Low Energy module on the top board.

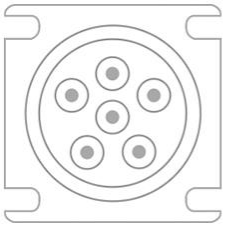
- Bluetooth Classic (2.1) Adapters that support just Android and Windows. These have a rectangular Bluetooth Classic module on the top board. These Adapters are no longer sold.

The Data Adapter

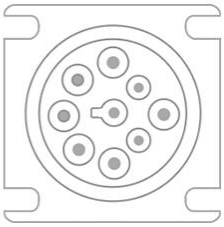
The Adapter connects to your diagnostic data port usually located under the dash on the driver side. There are three main styles of diagnostic ports: 6-pin, 9-pin, and OBDII. They will look like one of these:

Heavy duty vehicles

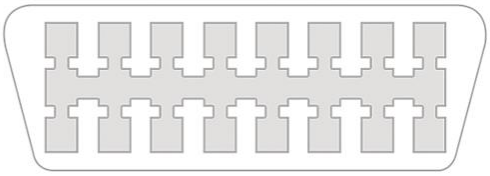
Light and medium duty vehicles



6-pin



9-pin



OBDII

As a general rule of thumb:

- Vehicles (motorhomes, trucks, etc) built from 1995-2001 generally have a gray 6-pin diagnostic port. Some may however have a rectangular 12-pin DDEC ALDL connector which we have a converter cable that will work with either the 6-pin or 9-pin Adapter.
- Vehicles manufactured from 2002-2006 may have either a black 9-pin or a gray 6-pin diagnostic port.
- Most Vehicles manufactured from 2007-2016 will have a black 9-pin diagnostic port.
- Vehicles manufactured in 2017 or later will have a green 9-pin diagnostic port.
- The OBD-II diagnostic port is used by automotive engine manufacturers (Ford, GM, Mercedes, etc) and requires a special OBD-II to 9-pin converter connector. Our Website/Store has a link to manufactures of this connector.
- Please verify what kind of port you have! We have seen a lot of variations out there.
- If you can't find the diagnostic port, look around the steering column and seat. It may also be behind the firewall panel where the electrical wiring is.

The 6-pin port connects to the J1708 data bus and will normally have only 4 physical pins (power, ground, J1708+, J1708-). The 9-pin port connects to both the J1939 and J1708 data busses and will normally have 6 physical pins (power, ground, J1939+, J1939-, J1708+, J1708-).

Note that the 6-pin Adapter is no longer available but you can still connect to a 6-pin diagnostic port by using a 9-pin Adapter and a 9-pin to 6-pin converter connector or cable. Links to the converter connector and cable are on our website/store.

Important Note - If you're using an Apple device you must purchase the Adapter specifically for Apple (9-Pin J1939/J1708 Green Bluetooth LE Adapter for Apple, Android and Windows).

The Data Adapter

Power Requirements

The Adapter is designed for 12 volt systems. In most vehicles, the diagnostic connector is 12 volts even if the vehicle is 24 volts. However if your vehicle is 24 volts you need to test the diagnostic connector as plugging the Adapter into a 24 volt system will damage it.

Power Usage

The Adapter consumes 75 mA of power during idle operation. There is a Sleep Mode that you can set using BlueFire Apps that will reduce the current draw to 55 mA. When this option is selected, the Adapter will turn off the LEDs and go to sleep two minutes after the ignition is turned off and BlueFire Apps has disconnected. The Adapter will wake up when BlueFire Apps reconnects to it.

Adapter LEDs

The Adapter has three colored LEDs, Blue, Green, and Red. They can be solid on or blinking. Their function is to provide Adapter status. The colors mean the following:

- Blinking Blue - the Adapter is waiting for the mobile device to connect to it.
- Blinking Green - The App is connected to the Adapter and the Adapter is waiting for ECM Data (ignition key off).
- Solid Blue - the App is connected to the Adapter and the Adapter is receiving ECM data (ignition key on).
- Solid Green - The Adapter has tested fine (see the 'Test the Adapter' section below).
- Blinking Red - The Adapter is in a Factory Resetting state and can be unplugged. See the Factory Reset section.
- Solid Red - The Adapter is writing data to its memory. IMPORTANT! DO NOT unplug the Adapter or cut power to it while it is solid red as you could corrupt its memory.
- Pulsating Red - The Bluetooth chip has failed (hardware 2.1 only).

You can change the brightness of the LEDs with the 'LED Brightness' setting. You cannot, however, turn them completely off.

You can also put the Adapter to sleep with the 'Allow Adapter to Sleep' setting. This will turn off the LEDs after two minutes of no activity.

When the Adapter is powered up, the LEDs will blink Blue. If you do not connect to the Adapter, then after a minute it will go into its Factory Resetting state (Solid Red, Blink Red for 15 seconds, Solid Red, then Blink Blue). See Factory Reset below. Do not unplug the Adapter while it is Solid Red. If you do nothing, then after another minute it will go to sleep provided you told it to.

The Data Adapter

Bluetooth

Having a good strong Bluetooth signal is imperative to maintaining a connection between the App and the Adapter. If you have a low or even a medium signal, you're very likely to experience Adapter disconnections since the App and the Adapter rely on a heartbeat that is sent back and forth to verify that each one is still actually connected. If the heartbeats are skipped or delayed, the Adapter or the App will automatically disconnect since one or the other believes that the other one is no longer connected.

The Bluetooth connection between the App and the Adapter is a special high speed Data connection. This is different from normal Bluetooth connections such as headsets, keyboards etc. This Data connection is very sensitive, and any disruption can cause the data to become corrupted and unrecoverable thus forcing the App to disconnect and re-connect.

Note, having a poor signal is not the only reason for the App to lose connection with the Adapter. See the 'Troubleshooting' section below for other possible causes of losing the Adapter connection.

The App will alert you if your Adapter's signal is poor. If this is the case, you need to improve it or live with the disconnections. Note, the App will attempt to automatically reconnect after a disconnection is detected.

One way to improve you signal is to add an extension cable so that you can move your Adapter to a more favorable location that will give you a stronger signal. You can pick up an extension cable from our store at https://bluefire-llc.com/store/extension-cable.

Signal Strength

Bluetooth Low Energy (BLE) Adapters have the ability to transmit their Bluetooth signal strength (called RSSI). The App uses this feature in two ways: showing signal strength and calibrating for out of range detection.

To show your Bluetooth signal strength, tap the App Settings 'Signal Strength' option to show the Bluetooth Signal Strength page. Select 'Signal Strength' and a signal strength meter will be shown showing your Bluetooth signal strength.

The signal strength meter shows 4 levels of signal strength:

- Excellent - you can't get any better.
- Good - still very good unless you're on the edge of being Fair.
- Fair - acceptable but you may get some Adapter disconnections.
- Poor - most likely you'll have difficulty connecting to the Adapter and will get a quite a few Adapter disconnections.

These values correspond to RSSI values and are not a measured percent, just an indicator of signal strength. Most likely you will never see 100%. To see the RSSI, tap the signal strength meter. To understand RSSI, just search for it on your web browser.

You can move your mobile device around to hopefully get a better signal. You might even try rotating it. Note that even body parts like hands and legs can affect the signal. Another option is to purchase an extension cable for the Adapter. You can find one on our website under the Connectors and Cables tab.

To see the total signal range of your mobile device, see the Troubleshooting section on how to connect your Adapter to USB power. You can then experiment with positioning your mobile device for the best signal reception.

Out of Range Calibration

Note, Windows does not support Out of Range Calibration.

If you are using a mobile device that you move around your vehicle with and want to be alerted when you are about to go out of range and lose the Adapter connection, you can calibrate the Adapter signal to detect and alert you when you are at 25% signal strength.

Note, you must be connected to the Adapter to use this feature. You do not have to have your ignition on, just connected (blinking Green).

To start Out of Range calibration, tap the Start button. Then move your phone or tablet around where you normally use it but close to the Adapter until you get the highest signal. This will set the 100% mark. Then slowly move your phone or tablet away from the Adapter until you lose the connection or you're at the furthest point away from the Adapter. Tap the Stop button if you're at the furthest point and still connected. This will set the 0% mark. When calibrated the App will monitor the signal strength and alert you when the signal strength is at or below 25%.

Adapter Security

Your Adapter can be secured such that no one else can connect to it. This is important especially if you're parking your vehicle in close proximity to other vehicles that might also have a BlueFire Adapter.

Setting security is accomplished from the Settings page's 'Adapter Security' option. All security information is encoded using AES 256 encryption. The available security options are as follows:

1. Secure with Device Id - allows only your mobile device to connect to the Adapter. This is the most secure as only you with your mobile device can connect to the Adapter.

2. Secure with Adapter Id - allows any mobile device that has previously connected to your Adapter to connect to the Adapter. This is handy if you have multiple persons accessing your Adapter using their own mobile devices (not at the same time though).
3. Secure with User Name and Password - allows any mobile devices with the same User Name and Password to connect to the Adapter. This is the simplest and only way to share your Adapter with others while still maintaining security.

Note, the settings can only be changed after connecting to the Adapter.

If the security does not match when connecting to the Adapter, an alert saying "You are not authorized to access this Adapter" will be shown.

To reset security you need to do the following:

1. Clear all security settings in the App (see the App Settings section below).
2. Reset the Adapter to its factory defaults.

It is possible that you may not be able to reset the security settings. This can occur if the Adapter gets interrupted while setting its internal security or you are trying to access another person's secured Adapter. If this is the case you need to contact BlueFire Support and explain your situation. If they determine you are legitimate, they can reset the security for you.

Adapter Registration

Your Adapter needs to be registered before you can connect to it.

Important Note - Your mobile device must be connected to the Internet for the initial Adapter Registration. Once the Adapter is registered you do not need to be connected to the Internet.

If you purchase your Adapter from our Store and use your Store email address in the App, registration will be automatic, otherwise you will need to enter your Store email address in the App Settings page's 'Adapter Registration's BlueFire Store Email Address field.

If you purchased your Adapter from Amazon, you must first clear any Store Email Address then enter your Amazon Order Number (including the dashes) in the App Settings page's 'Adapter Registration' option. Note, only Adapters from the Amazon BlueFire, LLC Store will be accepted.

If you are unable to register your Adapter, follow the steps below:

1. Email BlueFire Support (support@bluefire-llc.com) using your BlueFire App email address with the following information:
    a. When and where you purchased the Adapter from.
    b. A receipt of your purchase (a picture or order information).
    c. Any other information that will help validate your purchase.
    d. A picture of your Adapter.

2. Wait for BlueFire Support to respond. If your Adapter is not a valid Adapter, you will be notified of the reason, otherwise you just need to restart the BlueFire App with an Internet connection and you're Adapter will be registered.

Test the Adapter

You can test the Adapter's LEDs, and J1939 and J1708 connections using the App's Settings 'Test Adapter'. The ignition must be on before starting and all during the test but the engine does not need to be started. When you start the test, the Adapter will disconnect from the App and then the LEDs, and the J1939 and J1708 connections will be tested.

During the test the LEDs will blink 5 times for each color, Red, Green, and Blue, then go solid Red, and then solid Green. If any of the Red, Blue, or Green LEDs do not light up, or the LEDs do not go solid Green at the end of the test, contact BlueFire Support. The results of the test are as follows:

- LEDs are Solid Green - everything is good
- LEDs Blinking Red and Green - J1939 not working
- LEDs Blinking Red and Blue - J1708 not working

You can reconnect the Adapter after the test completes.

Note, if you turn off the ignition during the test, the results will not be correct. If after a successful test (LEDs are solid green) you turn off the ignition before reconnecting the Adapter, earlier versions of the Adapter firmware will cause the LEDs to alternate blinking green and red. This is normal.

Factory Reset

There are two ways you can reset your Adapter.

The first is from the App's Settings page. Scroll down and tap 'Reset Adapter'. You must be connected to the Adapter first before this option is enabled.

The second is from the Adapter itself. This is useful if you cannot connect to the Adapter for some reason. Follow the instructions below to reset the Adapter.

1. Unplug the Adapter and then plug it back in (power cycle it).
2. Wait for it to start blinking Red. This will occur one minute after plugging it in.
3. Unplug the Adapter while it's blinking Red (NOT solid red).
4. Plug the Adapter back in. It will start blinking Red right away.
5. Unplug the Adapter again while it's blinking Red (NOT solid red).

6. When you plug the Adapter in for the third time, it will perform a Factory Reset. The Adapter will go solid Red and then start blinking Blue.

Note, you can do this by unscrewing the cap and plugging the Adapter into a USB powered port (see the Troubleshooting section). But first, check your Adapter's Hardware version by going to the BlueFire App's About page. You need to be connected to the Adapter to see the Hardware version. If your Adapter's Hardware version is 2.0 or lower DO NOT unscrew the cap as you will damage the Adapter.

When unscrewing the cap, be careful of the USB connector and the electronic boards. If the top board of the Adapter has a rubber bumper make sure it is in the same position when you screw the cap back on. The rubber bumper keeps the top board from separating from the bottom board.

Firmware Update

You can find all the firmware updates on our forum at this link. If your Adapter is not compatible with the App, you need to contact BlueFire Support.

Note, the Adapter and App no longer supports Truck Electronic Data Logging (ELD).

You can either update the Adapter firmware yourself with a Windows 11 computer, or you can send the Adapter in to be updated.

Check your Adapter's Hardware version by going to the BlueFire App's About page. You need to be connected to the Adapter to see the Hardware version.

If your Adapter's Hardware version is 2.1 (Classic), or 4.1 or higher, you're good to go otherwise you need to send the Adapter in for updating. Note, Adapters with 3.1 hardware must be sent in for the firmware update and 4.1 hardware upgrade. Use this link to order your firmware update.

To update the firmware yourself, follow the steps below:

1. You need a Windows 11 computer to download and update the firmware.
2. You will also need a Micro USB 2.0 Data cable (Not a Power-Only cable) to connect your computer to the Adapter. You will also need to be logged into the computer as an Administrator in order to install the BlueFire Adapter driver.
3. Uninstall any existing Firmware Update Program version.
4. Download the Firmware Update Program from this link, unzip the file and install it. You only need to do this once as the updated firmware files are downloaded from the BlueFire server. Note, when installing the Firmware Update Program, if you see the 'Windows protected your PC' alert, you need to click on 'More info' then the 'Run anyway' button.

The Data Adapter

Now follow these steps to update your firmware.

1. Unscrew the aluminum cap from the Adapter. Important Note, this is only for Adapters with Hardware Version 4.1 or higher. DO NOT unscrew the cap if you have a 2.0 or lower version Adapter. You need to send it in to have the firmware update.
2. Connect a USB cable between your computer and the lower Adapter board. Be careful not to separate the two boards. If Windows starts to install a driver, click the 'Skip obtaining driver from Windows Update'.
3. Wait for the Adapter to boot (flashing blue or blue/green).
4. Start the Firmware Update Program. Note, you need to be connected to the Internet.
5. If the BlueFire Adapter Driver is not installed, you will be prompted to install it. Follow the Driver Install instructions exactly and TO THE LETTER (see below).
6. The program will download the firmware files and then attempt to connect to your computer's Bluetooth. If Bluetooth is available, the Update Firmware button will be enabled.

   Note, the firmware files are downloaded using FTP (File Transfer Protocol). If the files are unable to download, you will need to set your Internet connection to allow FTP download.
7. Click the Update Firmware button.
8. Wait for the firmware to update and the Adapter to reboot (DO NOT unplug the Adapter while the LEDs are solid red).
9. If the firmware update fails, try again. If the update continues to fail, restart the Firmware Update program and try the update again. If it still does not update, you will need to send the Adapter in for updating.
10. Disconnect the USB cable. Be careful you don't damage the Adapter's USB connector.
11. Very carefully screw the aluminum cap back onto the Adapter. Watch the top board through the translucent cap to ensure that it is not turning also. If the top board is turning, unscrew the cap slowly and check for the correct positioning of the 8 connector pins connecting the top board to the bottom board and that the two boards are tightly connected.

Adapter Repair

One of the Adapter selections is Repair. If your Adapter is not working, you can try this before sending it in for repair. If your Adapter has a memory corruption, this option may fix it. If the repair is successful it is recommended to update the firmware also.

Adapter Driver Install

Follow the steps below to install the BlueFire Adapter Driver. Follow these steps exactly and to the letter. It is a bit cumbersome, but you will only need to do this once.

1. Ensure you're logged into Windows as an Administrator.

2. In Device Manager, find 'Cerb-Family' under 'Other devices'. If it's not there, disconnect and reconnect the Adapter's USB cable. If it's still not there, check under 'Universal Serial Bus devices'. If it's there, the driver is already installed and you can skip this driver install. If it's not there, you may be using a USB Power-Only cable and need to change to a USB Data cable.
3. Right click and select 'Update driver'.
4. Select 'Browse my computer for drivers'.
5. Select 'Let me pick from a list of available drivers on my computer'.
6. Select 'Show All Devices' and click Next.
7. Click 'Have Disk'.
8. Browse (Browse Button) to 'C:/Program Files (x86)/BlueFire LLC/BlueFire Firmware Update/Driver'.
9. Double click 'GHI_NET_Interface.inf'.
10. Click OK to 'Install From Disk'.
11. Double click 'GHI NET Interface' or click Next.
12. Click Yes to any 'Update Driver Warning'.
13. Wait for the driver to update.
14. Click Close after the driver is installed.

Note, if the Driver Install fails, you may need to disable your anti-virus and try again.

Power Warning

WARNING!!! - The Adapter will write data to its memory if it needs to update its settings or perform a factory reset. When the Adapter is writing data to its memory, the LEDs will be Solid Red. It is imperative that power is not cut to the Adapter during this time otherwise the Adapter's memory could be corrupted. If this happens the Adapter will no longer function properly and you will need to send it in for repair.

You will see the Adapter writing data to its memory every time you disconnect from it (watch for the LEDs to go Solid Red).

Important Note, normally the diagnostic port is powered directly from the vehicle batteries such that it stays powered up all the time. However, there are some vehicles where the diagnostic port is powered by the ignition switch. If this is the case, it is possible to disconnect the Adapter and turn off the ignition switch such that power is cut while the Adapter is writing data to its memory thus corrupting the Adapter. You need to check your vehicle to see if this is the case.

The Data Adapter

If the Adapter is powered by the ignition switch, you should NEVER turn your ignition off if the Adapter LEDs are Solid Red. Only turn the ignition off when the Adapter LEDs are Blinking Blue or if the Adapter is sleeping (no LEDs). Memory corruption is not covered by the warranty.

Battery Warning

WARNING!!! - In most vehicles, especially trucks, the Adapter is powered directly by your vehicle's batteries. In some vehicles however, the Adapter is powered from your ignition switch. You can check this by looking at the Adapter with the ignition off. If the Adapter is blinking blue, then it is being powered directly from your batteries.

If the Adapter is being powered from your ignition switch you can ignore the Battery Warning as the Adapter is protected by the ignition circuit, however pay attention to the Important Note of the Power Warning above.

If the Adapter is being powered from your batteries, you need to pay attention to the information below as you could damage the Adapter beyond repair and this is not covered by the warranty.

If any maintenance is going to be performed that affects the batteries you must unplug the Adapter first. Also, if you're going to take your vehicle out of service (eg. storage) and you don't have a clean battery disconnect switch (no power spikes), then you must unplug the Adapter before disconnecting the batteries and plug it back in after the batteries are reconnected.

This includes disconnecting and reconnecting the battery cables and jumping the batteries from another vehicle or from an internal source such as your house or garage.

Failure to remove the Adapter prior to doing any battery maintenance or disconnection and reconnection risks damaging the Adapter beyond repair and is not covered under the warranty.

Note, you should NEVER unplug the Adapter if the LEDs are Solid Red. Only unplug the Adapter when the LEDs are Blinking Blue or if the Adapter is sleeping (no LEDs). See the Power Warning above.

Mobile Device Requirements

You can download 'BlueFire Apps' on a device of your choice from the appropriate App store. The App is free and will run in Demo mode without an Adapter. Just search for 'BlueFire Apps'. The specific App store links can be found in the BlueFire Store at this link.

Note, the 'BlueFire for Motorhomes' and 'BlueFire for Trucks' apps have been superseded with the 'BlueFire Apps' app. See the 'Migrating Your App' section for instructions on migrating an existing 'BlueFire for Motorhomes' or 'BlueFire for Trucks' app to 'BlueFire Apps'.

Apple iOS

iOS devices require iOS version 17 or higher.

Apple MacBook

The Apple MacBook is not supported.

Android

Android devices require version 8.0 (API Level 26) or higher.

If the App does not appear in the Google Play Store, you can try side-loading it (see below).

Note, Chromebooks, Android Auto, and most Android head units are not supported.

Amazon

The App and all Adapters are supported on the Amazon Fire tablets running Fire OS 7.1 API Level 26 or higher.

If the App does not appear in the Amazon App Store, you can try side-loading it (see below).

Note, GPS data (Speed, Elevation, Heading, and Location) are not available on Amazon tablets. A Compass is also not available.

Windows

Windows is no longer available on the Microsoft App Store. It is available as a Side-Load (see Side-Loading below) however side-loading is not guaranteed on all Windows devices.

IMPORTANT - If you're unable to side-load the App on your Windows device, you must select an Apple, Android, or Amazon device to run the App.

Mobile Device Requirements

Your Windows computer should have the following specs and power options:

- 2.0+ GHz processor
- 4+ GB RAM (8 recommended)
- 64-bit OS Windows Latest Version
- Open COMM ports. Windows uses two COM ports for Bluetooth so if you have any devices also using the COM ports (eg. USB drives), they could conflict and keep Bluetooth for connecting to the Adapter.
- Power Option - High Performance

To set a High Performance power option do the following:

1. Go to Settings/System/Power & sleep/Additional power settings (or Control Panel/Power Options)
2. Create a power plan (left hand side)
3. Select the High Performance button.
4. If High Performance is not shown do the following:
    a. For Surface Tablets do the following (requires editing the registry):
        - Search and start Regedit from the search tab.
        - Enter 'HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Power' into the top bar.
        - Change the value of the CSEnabled key from 1 to 0.
        - Close Regedit.
        - Reboot.
        - Go back to Power Options and select High Performance.
    b. For Windows Laptops try the suggestions in the following link:
        - https://www.tenforums.com/tutorials/110372-restore-missing-default-power-plans-windows-10-a.html
5. Name the plan High Performance.
6. Click Next.
7. Change 'Turn Off Display' to your desired settings.
8. Click Create.
9. Select your High Performance power plan.

Recommendation

Apple iOS

The Apple iPad is the most popular and most stable. But make sure you check out the Apple iPad requirements first.

Mobile Device Requirements

Android

Samsung tablets are popular and fairly equal to the iPad. With any Android device, make sure you get one with Android version 8.0 or higher. Unknown knockoff Android tablets are not recommended.

Amazon

The latest Amazon Fire HD 10 Plus tablets are quite nice and seem to work well but make sure you get one with Fire OS 7.1 or higher. Also, the Fire tablets do not have GPS or an internal compass therefore you will not be able to use the Direction, Altitude and Compass gauges. Location data is also not available.

Microsoft

Windows computers are the least popular but seem to work fine. The Surface tablet is the most popular. Just ensure that your Windows computer is from a reputable brand and has enough specs.

Because you can add quite a few accessories (SD cards, etc) to Windows computers, these accessories have caused issues with the Bluetooth connection in some computers.

IMPORTANT - The App is not available in the Microsoft Store. It is only available as a Side-Load. See the 'Side-Loading' section above for instructions on side-loading the App. If you are unable to side-load the App it is recommended to choose either an Apple, Android or Amazon device.

Side-Loading

Side-loading is not possible with Apple devices.

For Android and Amazon devices, in most cases the App can be found in the Google Play Store and the Amazon App Store. If the App does not show up in the store, you can side-load it from this link. If you're unfamiliar with side-loading Android Apps, just search Google for instructions.

For Windows computers, the App is no longer in the Microsoft Store so you must side-load the App to install it. To side-load the App follow the instructions below:

1. Set Windows Explorer to show File Name Extensions.
2. Turn on Developer Mode. This is required for side-loading.
    a. Go to Settings/Update and Security/For developers/
    b. Turn on Developer Mode.
    c. Turn on PowerShell settings.
3. Download the file from this link. This a large file so a good Internet connection is needed.
4. Extract the downloaded BlueFire Apps zip file.
5. Go to the extracted BlueFire Apps folder.

6. Ensure the files are unblocked. Right-click the files and select Properties. Select Unblock at the bottom-right of the General tab and select Ok.
7. Right click on 'Install.ps1' and select 'Run with PowerShell'.
8. Respond to the prompts.
9. The App should install. If it does not install It is recommended that you use an Apple, Android, or Amazon device.
10. If the App is installed, you can delete the downloaded BlueFire Apps folders.

GPS

GPS is not required but without it you will lose the following features:

- Retrieving Trip locations
- Retrieving Dealer locations
- Retrieving Data Logging locations
- Navigation Map, Compass, Direction and Elevation gauges

Using GPS requires permissions to access your device's location. When you install the App, you must authorize the App to access your location, otherwise GPS will be turned off in the 'Ignore Location Services' option in the Settings page. If you have the option for location permission to 'Always' allow access, you should choose this option.

Note, with Apple devices, you must have Location Services turned on before installing the App.

Note, with Android devices, Location Services must be turned on along with Google Location Accuracy.

Note, with Amazon Fire devices, GPS is not supported.

GPS data can be retrieved from two sources (in order of priority):

1. Your device's GPS receiver can retrieve Location, Direction, Elevation and Speed.
2. Your Internet connection can retrieve only Location.

When the App starts, it checks to see if a GPS receiver is installed in your device. This check is not necessarily 100 percent accurate so if it detects no GPS receiver, you can override it with the 'Ignore GPS Detection' option in the Settings page. Note, if you have an external GPS, you may need to configure it to allow BlueFire Apps access to the data.

If you do not have a GPS receiver, you will not be able to use the Compass, Direction, and Elevation gauges. Location will still be retrieved but only if you have an Internet connection.

Mobile Device Requirements

After the App starts up it will start monitoring your GPS. If you are not interested in retrieving any GPS data you can turn off GPS with the 'Ignore Location Services' option in the Settings page.

If the App cannot retrieve your GPS data there are many reasons such as:

- No GPS - you don't have a GPS receiver in your device
- Authorization - you need to allow the App to access your location
- No Signal - your GPS cannot find the GPS satellites or the Internet
- External GPS - not configured properly to allow the App to access the data

The Elevation gauge uses your GPS to retrieve the GPS altitude. The Direction gauge will use GPS if your mobile device does not have an internal compass. On the View Dash page these are updated every second when they are locked. If for some reason they stop updating, you can restart them by single tapping the gauge.

Note, in iOS devices the Direction gauge may activate the device's Compass Calibration. If this occurs you can turn off Compass Calibration by going to Settings/Privacy/Location Services/System Services (you'll need to scroll down to System Services) and turning off Compass Calibration. But it's probably a good idea to have your compass already calibrated by a calibration App.

Internet

Like GPS, an Internet connection is not required but without it you will lose the following features:

- Emailing (see below)
- Location (if GPS is not available)
- Trip location's city and state
- The Navigation Map gauge
- Retrieving Dealer locations
- Sharing a Dash with yourself or a friend
- Importing a Dash from a friend
- Download other Dashes from the Dash Repository
- Showing What's New and the Getting Started document
- Automatic BlueFire support notifications

Note for Windows computer, if you have a firewall that is blocking any of these Internet features you may need to allow TCP Port 1433 for outbound traffic.

Mobile Device Requirements

Email

The App has the capability to send email internally. It will send an email for the following reasons:

- Sharing your Dash
- Uploading your Dash
- Sending Trips to you
- Sending Faults to you
- Sending the Data Log to you
- Sending the Event Log to BlueFire Support
- Sending system errors to BlueFire Support

The App uses BlueFire's email servers for sending emails. It must be able to connect and authenticate with a server in order to send email. If your device does not have an Internet connection or is blocking the authentication, emails cannot be sent by the App.

In the event that the App cannot connect to a BlueFire email server, the following will use your device's email client. Note, on Windows devices, attachments will only be available with the native Windows Mail client.

- Sharing your Dash
- Sending Trips to you
- Sending Faults to you
- Sending the Data Log to you
- Sending the Event Log to BlueFire Support

Exploring the App

Step 1

Download 'BlueFire Apps' on a device of your choice from the appropriate App store. The App is free and will run in Demo mode without an Adapter. Just search for 'BlueFire Apps'. The specific App store links can be found in the BlueFire Store at this link.

Step 2

Open BlueFire Apps on your device. The first time you start the App the following will occur:

- You will be prompted to select a specific App (Trucks, Yachts, Motorhomes, etc). Select the one that best suits your needs. The Trucks App will allow you to enter a truck number for trips and data logging. The Yachts App defaults to showing speed in knots. And Dealer Search will be specific to each App.
- The EULA will be shown. This is the legal agreement between you and us. You're welcome to read it but it is very legalese. Check the appropriate boxes and continue.
- Important notices may be displayed. Make sure you read these notices as they are important.
- Your home time zone will be set to the local time zone. Change this in the Settings page if it is not correct.
- A prompt will be shown requesting you to enter your email address in the Settings page. This will continue to prompt until you do so.

Step 3

Go to the Settings page and set up the App for your particular use (see the App Settings section below).

Step 4

Start exploring some of the features. The App will run in a demo mode and give you a look at what functions are available. You can even design your dash in demo mode.

- **Dash Page** - Shows your custom dash. See the Customize your Dash section for more info.
- **Customize Dash Page** - Allows you to create and modify your custom dash.
- **Trip Page** - Shows your current and past trips and allows you to start a trip, see trip data during a trip, and end your trip. Trip data can be emailed to you as an Excel formatted file for your personal trip records.
- **Drive Page** - Shows vehicle information that would normally be useful while driving.

Exploring the App

- **Repair Page** - Shows information that may help diagnose a problem with your vehicle.
- **TPMS Page** - Shows the tire status of your TPMS. Your TPMS must be configured from the Settings page before this will show on the Home page.
- **Faults Page** - The Adapter will read fault codes and show the fault information including the standard fault description. You can tap on the fault to see what was happening in the engine at the time of the fault and you can choose to save or email the fault to yourself for your records.
- **Logging Page** - Provides the opportunity to select certain data you want to monitor and log. You specify the interval in seconds that the App should check the data and how often it should email the log to you. When you start logging it will record all the data points chosen and keep a record of these in an Excel style spreadsheet. This can be used for fuel economy analysis and might be very helpful in trouble shooting a problem.
- **Info Page** - Shows the VIN, Make, Model, Serial No, etc. for the vehicle, engine, brakes, and transmission. Note, not all manufacturers will send this information so it could be incomplete. See the Ignore Vehicle Info settings.
- **Settings Page** - Allows you to set up and configure the App and Adapter for your particular use. See the 'App Settings' section below.
- **About Page** - Shows information about the App, the Adapter, and us (BlueFire). Please note the 'What's New' button, as it will list what improvements that have been made to the App. The 'Getting Started' is also available to view.
- **Connect** - Initiates the connection to the Adapter.

App Settings

Below is information and suggestions for setting up the App for your particular use from the Settings page.

- **Metric**: Select this to show data in metric, otherwise it will be shown in standard US measurements. You can also set individual gauges to be metric or not. Changing this setting will change all gauges and you can then go into each gauge and change it to what you want.
- **Auto Connect:** This will cause the App to automatically attempt to connect to the Adapter when you start the App. Combined with the Customize Dash 'Show your Dash on Startup' option, you can have your dash connected and displayed every time you start the App. It is recommended though that you only select this after you have finished designing your dash and your mobile device is permanently mounted in your vehicle. If Auto Connect is selected

and you're not in range of the Adapter, the App will continue to retry the connection until it times out or you cancel it which could be an annoyance.

- **App Brightness:** Select this if you want the App to be displayed at maximum brightness.
- **Keep Screen On:** Select this if you want the App to keep the screen on while the App is connected to the Adapter. Note, this may not work on all devices.
- **Show EULA:** Select this if you want to see the End User License Agreement (EULA) every time the App starts up.
- **Show Logo:** This will show the BlueFire logo on the Home page. Turning this off can be useful if you are running the App on a very small device or in landscape mode.
- **Show Key On/Off:** Show a notification indicating the ignition key on or off when it changes.
- **Demo Mode:** Show demo data on all the pages. This can be handy when designing your dash as the data will give you a good idea on the correct size of the gauges. Note that if you have a trip started or you have connected/disconnected from the Adapter, showing demo data will be disabled. Turning this off will only show data that comes from your vehicle ECMs after connecting to the Adapter. Demo data will not be shown thus eliminating any confusing data.
- **Ignore Location:** Choose this setting if you do not want to use your GPS or your network connection to retrieve your location. Location Services is used to determine your location for Trips, Dash Maps, GPS Gauges, Logging, Dealer Searching, and IFTA Reporting. Setting this on can improve startup time and overall performance. If the App cannot access Location Services when it starts it will automatically turn this setting on. You can retry accessing Location Services again by turning this setting off.
- **Location Interval:** Set the interval in milliseconds (1000 = 1 sec) for checking for a change of location. Changing this will impact location updates, and the Navigation Map, Compass, Direction, and Elevation gauges. Note, decreasing this can affect overall performance of the App if you do not have a sufficiently powered mobile device.
- **Ignore GPS Detection:** Choose this setting if your mobile device has a GPS receiver but the App alerts you that your GPS is not available. Note, this option will only be visible if the App has detected no GPS.
- **Use GPS Compass:** Set this to use your GPS heading for the Compass gauges instead of your mobile device's internal compass. Note, this option will only be visible if you have a GPS receiver.

- **Use GPS Speed:** Set this to use GPS speed for the Speedometer reading instead of the vehicle Speed. Note, this option will only be visible if you have a GPS receiver.
- **Show Speed in Knots:** Shows the GPS Speed in Knots instead of Mph/Kph. Note, this is only for the Yachts App. Note, this option will only be visible if you have a GPS receiver.
- **Show Google Maps:** Shows Google Maps on the device's web browser instead of the device's default maps (Apple or Bing maps). This setting requires GPS so if the 'Ignore Location Services' setting is checked then this setting will not be visible. Also, if Google Maps is already installed then this will not be visible and Google Maps will be used.
- **Lock App Orientation:** Locks the App to the current orientation of your device or the orientation that the App starts with. All pages with the exception of your custom dash will be shown in this orientation. Your custom dash has a separate 'Lock Dash Orientation' option that overrides this setting.
- **Monitor Faults:** Select this if you want the App to constantly be monitoring the Adapter for faults. This uses a lot of processing time as it is checking every second for faults. Use it only if necessary, otherwise - it is more efficient to click on the Faults icon on the home page and check it yourself from time to time. If however, you are trying to diagnose an intermittent fault or some other problem, you will want to select this. Note, if you place the Engine Status gauge on your dash, faults will be monitored while you have your custom dash displayed.
- **Auto Email Faults:** If you select this, the App will send an email to you whenever a fault is detected, even intermittent ones.
- **Show Informational Faults:** This will show faults that do not cause the check engine light (MIL) to come on. Not recommended as there could be many of these.
- **Show Faults on Adapter Connection:** This is primarily for mechanics. It will open the Faults page immediately after starting the App.
- **Show Dash on Adapter Connection:** This will open the View Dash page immediately after starting the App.
- **Retrieve Vehicle Info:** This will instruct the App to request the vehicle's VIN, Make, Model, and Serial number from the Adapter. This will impact performance and is not recommended unless you need the information on your trip and logging reports. Note, that you can still enter your VIN manually (see below).
- **Vehicle VIN:** This allows you to enter your Vehicle's VIN instead of retrieving it from the ECMs. You can enter either the Engine VIN or the Vehicle VIN depending on which one you

reference your vehicle with. This will improve performance since the VIN is not being retrieved from the ECM. Note, this is only visible if Ignore Vehicle Info is checked.

- **Show Engine VIN:** Select this if you want to show the Engine VIN instead of your Vehicle VIN in your trip and logging reports. If both Show Engine VIN and Show Vehicle VIN are not selected, Engine VIN will take precedence. Note this is only visible if Ignore Vehicle Info is not checked.
- **Show Vehicle VIN:** Select this if you want to show your Vehicle VIN instead of the Engine VIN in your trip and logging reports. If both Show Engine VIN and Show Vehicle VIN are not selected, Engine VIN will take precedence. Note this is only visible if Ignore Vehicle Info is not checked.
- **Save Vehicle Info on Exit:** This will save your vehicle information (VIN, Make, Model, etc) when the App exits. This will improve performance if you have only one vehicle. But make sure you set 'Ignore Vehicle Info' on after the App has saves your vehicle information.
- **Use Bluetooth Low Energy (BLE):** Select this to always connect to the Adapter using Bluetooth Low Energy (BLE). This will not be shown for Apple devices as all Apple devices use BLE. For Android and Windows devices this will automatically be selected when connecting to the Adapter but you can speed up the connection time if you have a BLE Adapter and you select this first. This will not be shown if 'Use Bluetooth Classic (2.1)' is checked. You must uncheck 'Use Bluetooth Classic (2.1)' to check this option. Note, a BLE Adapter is an Apple/Android/Windows Adapter and has a square Bluetooth module under the cap (See Adapter Styles above).
- **Use Bluetooth Classic (2.1):** Select this to always connect to the Adapter using Bluetooth Classic 2.1. This will not be shown for Apple devices as all Apple devices use Bluetooth Low Energy. For Android and Windows devices this will automatically be selected when connecting to the Adapter but you can speed up the connection time if you have a Bluetooth Classic Adapter and you select this first. This will not be shown if ' Bluetooth Low Energy (BLE)' is checked. You must uncheck ' Bluetooth Low Energy (BLE)' to check this option. Note, a Bluetooth Classic Adapter is an Android/Windows Adapter has a rectangular Bluetooth module under the cap (See Adapter Styles above).
- **Connect to Last Adapter:** Selecting this will instruct the App to only connect to the Adapter it last connected to. This will prevent the App from accidentally connecting to another Adapter that might be nearby.

- **Connect to Strongest Signal:** Select this to connect to the Adapter with the strongest Bluetooth signal. This will discover all Adapters in the area and choose the one with the strongest (highest) signal strength. Note that using this option will slow down the Discovery portion of the Adapter connection. Use it only if you are in a crowded area and cannot connect to your Adapter.
- **Bluetooth Discovery Timeout:** Set this to the timeout value (in seconds) for Bluetooth to discover the Adapter. Try increasing this if the App is not finding the Adapter. Increasing this too high will cause reconnection attempts to take a longer time. Note, if you clear this it will be set to its default value and the App will adjust it up or down depending on whether it discovers the Adapter or not. Changing the 'Use Bluetooth Low Energy', 'Use Bluetooth Classic 2.1', or 'Connect to Last Adapter' options will reset this to its default value.
- **Adapter Connection Timeout:** Set this to the timeout value (in seconds) for the App to connect to the Adapter. This occurs after Discovery. Try increasing this if the App is not connecting to the Adapter. Increasing this too high will cause reconnection attempts to take a longer time. Note, if you clear this it will be set to its default value and the App will adjust it up or down depending on whether it connects to the Adapter or not. Changing the 'Use Bluetooth Low Energy', 'Use Bluetooth Classic 2.1', or 'Connect to Last Adapter' options will reset this to its default value.
- **Adapter Connection Attempts:** Set this to the number of times you want the App to attempt to connect to the Adapter. If your mobile device does not connect to the Adapter, try setting this to a value that allows for a consistent connection. The default is 5 attempts.
- **Bluetooth Recycle Attempt:** Set this to the Connection Attempt number when Bluetooth will be recycled (turned off and back on). This may help with reconnecting the Adapter but will turn Bluetooth off and back on. The default is on the 2nd attempt. Note, this will not be visible on Apple devices as it's not applicable since the App is not allowed to turn Bluetooth off or on.
- **Adapter Reconnection Attempts:** Set this to the number of times you want the App to attempt to reconnect to the Adapter after losing connection. The default is 5 attempts.
- **Reconnection Audio Alerts:** Set this to the number of reconnection audio alerts. The default is the number of Adapter Reconnection Attempts (see above).
- **Recycle Bluetooth:** Selecting this will cause the App to recycle Bluetooth (turn off and back on) when the Adapter is disconnected. This can improve Adapter connection when subsequent connections fail. For Windows computers, it is recommended to turn this on.

Note, this will not be visible on Apple devices as it's not applicable since the App is not allowed to turn Bluetooth off or on.

- **Bluetooth Signal Strength:** Use this to view your current Adapter's Bluetooth signal strength, or to calibrate your Adapter so that you will be alerted when going out of range. Note, this will only be visible if you have the 'Use Bluetooth Low Energy (BLE)' setting checked. See the 'Signal Strength' section for more info.
- **Adapter Minimum Interval:** This to the Adapter's minimum data transmit interval (in milliseconds). Setting this to a low value (less than 300 ms) will increase the Bluetooth data traffic and will improve data response times. Setting this to a high value (1000 ms or greater) will reduce the Bluetooth data traffic but will slow down receiving data. See the 'Performance' and 'Adapter Data Buffers' sections for more information on receiving Adapter data.
- **Performance:** Improves update times for slower response data. If you're experiencing slow update times for some of your gauges in your dash, try setting one of the options here. See the 'Performance' section for more information on Performance options.
    - **Performance 1:** Improves update times for medium speed data such as Boost Pressure, Oil Pressure, and Coolant Pressure.
    - **Performance 2:** Improves update times for slow speed data such as Brake Pressures, Temperatures, and Battery Voltage.
- **Connect to a J1939 Data Bus:** Select this to instruct a 9-pin Adapter to connect to the J1939 data bus. This is selected by default unless the Adapter is a 6-pin. J1939 refers to the name given to the network standard that the vehicle computers are using. J1939 became the standard around 2004, however there continued to be some manufacturers that used the older J1708 standard for a while after that. Note, you need to be disconnected from the Adapter to change this option.
- **Connect to a J1708 Data Bus.** Select this to instruct a 6 or 9-pin Adapter to connect to the J1708 data bus. If you're using a 6-pin Adapter, this will automatically be selected after you connect for the first time. If you're using a 9-pin Adapter, only select this if you must as it places a burden on the Adapter to retrieve J1708 data. This standard was adopted when computers were first introduced into vehicles and ran until 2004-5 however you may still have J1708 computers in your vehicle with later year vehicles. Note, you need to be disconnected from the Adapter to change this option.

Exploring the App

- **Connect to an OBD-II Data Bus:** Select this if you have a vehicle with an automotive engine (Ford, GM, Mercedes, etc) and an OBD-II diagnostic port (rectangular instead of round). You will also need an OBD-II to J1939 converter connector to use with our J1939 Adapters. Most OBD-II vehicles 2015 and newer will work with our Adapter. Older vehicles may or may not work. See the 'OBD II Data Bus' section for more information. Note, you need to be disconnected from the Adapter to change this option.
- **LED Brightness:** This allows you to set the level of brightness by a percentage. 100% down to 1% (Note: please remember that the LED colors are there for a reason so it is not possible to turn them off completely.)
- **Allow Adapter to Sleep:** This will turn the Adapter LED's off after 2 minutes of no activity. It will automatically wake up once the app connects.
- **Adapter Security:** Allows you to change the security settings - Secure with Device Id; Secure with Adapter Id, and Secure with User Name and Password. Secure with Device Id will only allow your mobile device to connect to the Adapter. Secure with Adapter Id will allow any mobile device that has previously connected to your Adapter to connect to the Adapter. Secure with User Name and Password will allow any mobile devices with the same User Name and Password to connect to the Adapter. You can use the security settings to ensure no one near you accidentally (or on purpose) connects to your Adapter. Note, you need to be connected to the Adapter to change this option.
- **Ignore Aftertreatment:** This relates to newer vehicles with diesel exhaust fluid (DEF) and a catalytic converter to significantly reduce harmful emissions. Select this to instruct the App to not request this information from the Adapter. This will improve performance if you do not need to see this information.
- **Ignore Transmission Data:** Select this to instruct the App to not request this information from the Adapter. This will improve performance if you have a manual transmission or if you do not need to see this information.
- **Ignore Out of Range:** This keeps the App from detecting if your mobile device is getting close to the end of Bluetooth range (20-30 feet) and requires calibration (see the Calibration section). Note, this will only be visible with an Apple/Android/Windows (BLE) Adapter on Android or iOS (not Windows).
- **Show Actual Torque:** Select this to show percent and actual torque on the Drive page and set torque gauges to show actual torque instead of a percent (can be overridden). Note, actual torque requires Max Torque to be retrieved from the ECM or entered manually.

- **Max Torque:** This sets your vehicle's maximum torque value used to calculate actual torque from torque percent. Enter 0 to attempt to retrieve Max Torque from the engine ECM (after connecting to the Adapter).
- Clear Persistent Data: Clear the persistent data. See the Persistent Data section for more information
- **Night Mode:** This allows you to have the App change its App Color settings from day to night and visa-versa based on chosen options of using the mobile device's light sensor (Light Sensor); setting begin and end times (Set Times), or manually turning night mode on and off (Manual On).

  The 'Light Sensor' option requires a mobile device that supports retrieving the ambient light level from the sensor. If the mobile device does not have a sensor, this option will not be available. Also, Apple does not allow Apps to access the light sensor so this option is not available on Apple devices. For those devices that do support the light sensor, you can set the 'Night Level' to a value that when the 'Current Level' goes below it night mode will be activated. You can also set the 'Delay Interval' that will keep the App from changing night modes during the delay interval. This can help with night mode fluttering when the 'Current Level' is fluctuating around the set 'Night Level'. Note, when you first select this option, the 'Current Level' will show 'NA'. You must go back to the Home page to activate the sensor and then return to the Settings page to see the 'Current Value'. If the 'Current Value' remains 'NA' then the App is not able to retrieve the ambient light level and you need to choose another option.

  The 'Set Times' option allows setting the 'Begin Time' and 'End Time' for turning night mode on and off. These times can be set using either a 12 or 24 hour format and are entered as hh:mm with am/pm for the 12 hour format. The default is 6:00 PM to 6:00 AM.

  The 'Manual On' option allows you to turn night mode on and off. Night mode will stay on or off until you change it again.

  Note, setting or changing a Night Mode option (Light Sensor, Set Times, Manual On) requires you to go back to the Home page to activate the change.
- **App Colors:** Shows the App Colors page which allows you to customize any of the colors used by the App. To customize the colors of your dash and gauges use the 'Dash Colors' options in the Customize Dash and Customize Gauges pages.
- **Audio Alerts:** Shows a page where you can set the alert audio file, audio volume and alert text to speech (TTS). The alert audio file and audio volume are for all System Alerts and are

the default settings for Dash and Gauge Alerts. The alert TTS, TTS pitch, and TTS volume are the default settings for Dash and Gauge Range Alerts. See the 'Gauge Alerts' section for more information on the alert options.

From this page you can also set the 'Silent Reconnection' and the 'Silent Background' options. The Silent Reconnection option silences the alerts when the App is reconnecting to the Adapter. The Silent Background option silences the alerts when the App is in the background.

- **Fuel and DEF:** Shows a page where you specify the Fuel Tank Type (single, dual or different), the primary Fuel Tank Capacity and many other options. See the 'Fuel and DEF' section for more information on Fuel and DEF options.
- **TPMS Configuration:** Shows a page where you can configure your axle/tire configuration for a TPMS installation. See the ' Tire Pressure Monitoring (TPMS) ' section for more information on TPMS configuration.
- **Alert Duration:** This allows you to set the time (in seconds) that will automatically respond and dismiss the 'Ok' alert. This can be handy while you're driving to allow you to keep your hands on the steering wheel.
- **Dealer Search Order:** This allows you to change the order of dealers when searching for a dealer in the Faults page. Note, in Demo mode you can only select one dealer. Once you connect to the Adapter you can select more.
- **Odometer Offset:** Set this if your vehicle dash odometer is different from your custom dash odometer and you want to make them the same. For example, if the vehicle shows 100,000 but the App shows 100,010 set the offset to -10 so the App will show 100,000.

  Note, most vehicles keep track of distance in two ECMs, the Engine ECM and the Vehicle ECM. The Odometer comes from the Vehicle ECM if it exists otherwise it is retrieved from the Engine ECM. You can see the Engine distance in the Repair page as 'Distance'. If there is a significant discrepancy, the Odometer will be highlighted.
- **Speedometer Ratio:** Set this if your vehicle dash speedometer is different from your custom dash speedometer and you want to make them the same. This is most likely caused by oversized tires. Note, this is a ratio that you have to calculate based on your tire size.
- **Engine Hours Offset:** The engine hours displayed on your instrument panel may be different from the app reading coming from the engine itself. This is not uncommon when an engine is replaced. This allows you to adjust by the difference. (See example in Odometer offset).

- **Outside Temperature Offset:** If you need to adjust the outside temperature because the sensor is off, you can input a positive or negative number to help obtain a more accurate reading.
- **GPS Speed Offset:** Adjusts the GPS Speed reading with a plus or minus offset. This allows you to correct any GPS calculation errors.
- **GPS Elevation Offset:** Adjusts the GPS Elevation reading with a plus or minus offset. This allows you to correct any GPS calculation errors.
- **Heading Offset:** Adjust the Compass Heading with a plus or minus offset. This allows you to correct any GPS calculation errors, or to adjust the device compass to match driving orientation.
- **Font Size:** This refers to the font size of all text in the App. The options are small, medium, large, and extra-large. You will need to restart the App for this change to take effect. You can use Font Size and Adjust Font Size to customize the App so that all the data is shown on a page without text wrapping.
- **Adjust Font Size:** This allows for a more specific font size adjustment. The value is in pixels and must be between -10 and +20. You will need to restart the App for this change to take effect.
- **Data Not Available:** Enter the value to be shown for data that is not available from the ECMs. The default is 'NA'.
- **Home Time Zone:** Your home time zone (where you live). You can also set if you want the App to show time as a 24 hour clock.
- **Email Address:** Enter the email address you would like the App to send trips, logging, and fault information to you. Email address is required and the App will continue to remind you to enter it.
- **Use Local Email App:** Select this if you want to use your device's email App instead of BlueFire's internal email client. You can use this if you are having issues with emailing your trips, faults, or sharing your custom dash. Note for Windows user, use this only if the Windows Mail App is the default Email (or Mail/EMAILTO) App.
- **Adapter Registration:** This allows you to register your Adapter with either your BlueFire Store Email Address or your Amazon Order Id. If you don't know either one, contact BlueFire Support for assistance. See the 'Adapter Registration' section for more info.

- **Send the Event Log:** This will email the App's Event Log to BlueFire Support. Do this only if requested by BlueFire support. This is used by BlueFire Support to help trouble shoot a problem.
- **Clear the Event Log:** This will clear the App's Event Log. As the Event Log is automatically cleared every two weeks and it does not consume very much storage, you should not need to do this but in the event your mobile device's storage is filling up, you can try this to see if it helps.
- **Reset Hidden Alerts:** This will cause all the hidden alerts (alerts with the 'Got It' button) to be displayed again. This is helpful if you accidentally tapped the 'Got It' button on an alert that contains instructional information and you want to see it again (for example, the alert you see when first showing a custom dash).
- **Reset the App:** This will reset the App to its initial factory settings. Please note that resetting the app will delete all Settings, Custom Dashes, Saved Trips and Logging Files.
- **Test the Adapter:** This will test the Adapter's LEDs, and J1939 and J1708 data connections. The Adapter must be connected and the ignition on but the engine does not need to be running. The LEDs will blink 5 times for each color, Red, Green, and Blue, then go solid Red for 5 seconds, then solid Blue. If any of the Red, Blue, or Green LEDs do not light up, or the LEDs do not go solid Blue at the end of the test, contact BlueFire Support.
- **Reset the Adapter:** This will reset the Adapter to its initial factory settings. If you are having trouble connecting to the Adapter, resetting it may help. You must be connected to the Adapter before performing a reset. The App will automatically disconnect from the Adapter. After the Adapter resets (approximately 30 seconds), the LEDs will be blinking red, green and blue. You must then unplug and re-plug in the Adapter to complete the reset.
- **Change the App:** Change the BlueFire Application. This allows you to switch between BlueFire Applications (Trucks, Yachts, Motorhomes, etc.).
- **Hide Descriptions:** Set this to not show the descriptions of all settings and page options. This will show only the single title row of settings and options.
- **System:** These are advanced system settings. Please use with caution. You most likely will have no need of these.

Closing the App

While you are using the App, persistent data (Settings, Fuel data, etc) can change. This persistent data is saved when you navigate to a new page or when you close the App. Likewise, if you are

connected to the Adapter and you close the App without disconnecting, the Adapter will timeout and disconnect itself.

The recommended method for closing the App is to either add the 'Close App' Button Gauge to your custom dash or return to the Home page and use the Close button there. Failure to close the App properly can result in persistent data not being saved and the Adapter not disconnecting thus causing issues later on.

With different devices you may have more leeway for closing the App properly than using the Close buttons. An easy way to check is to connect to the Adapter and unlock your gauges from the Customize Dash page. Then close the App the way you would without using the Close App buttons. Check to see if the Adapter starts blinking blue after a short time. If it continues to blink green or stays solid blue, the App did not close properly and you will need to use the App's Close buttons. If the Adapter is blinking green, open the App back up and check to see if the gauges are unlocked. If they are still locked the App did not close properly and you will need to use the App's Close buttons.

With Apple devices, you may be ok with powering off your device to close the App. This will depend on the speed of your processor and how many other apps you have running. You should check and verify that this method is ok before using it (see above).

For Android devices, in most cases the Android Back button is ok to close the App but you should verify it with the method above. Swiping the App off the page to close it or powering off your device will not close the App properly.

With Windows computers and tablets, you can 'X' out any page to close the App. End Tasking the App from the Task Manager or powering off your device will not close the App properly.

Factory Reset

You can factory reset the App from the Settings page. Scroll down and tap 'Reset App'. A warning message will be displayed indicating that all your settings, custom dashes, saved trips, saved faults, any log files, etc will be deleted. This is the same as uninstalling and re-installing the App.

Exploring the App

Backup / Restore

You can backup and restore your App files with the App Settings 'Backup\Restore options. The Backup option will back up the App Settings, Colors, Custom Dash, saved Dashes, and save Trip files individually one at a time. The Restore option allows you to select and import multiple files at one time.

For backing up and restoring files you should be familiar with the file manager on your device and how it represents saving and selecting files. For example, on iOS you don't 'save' a file, you 'Move' it. When restoring files, only the file type (xml) will be available for restoring.

Note, this is only for backing up and restoring the files listed above. For other files such as ringtones and images you will need to restore them in the same manner as you entered them (Audio Alerts for ringtones, Customize Gauges for images, etc).

It is recommended that you first create a 'BlueFire Backup' folder and backup the files to that folder so you know where and what the files are for. And if you're really organized you can create a Trips and Dashes folders for the saved Trips and saved Dashes.

Uninstalling the App

Uninstalling 'BlueFire Apps' will delete the App and remove all your settings, custom dashes, saved trips, saved faults, and any log files. You can then reinstall the App and start fresh. You can also perform the same function by factory resetting the App from the Settings page.

Connecting the Adapter

Before connecting your Adapter for the first time you should first explore the App and become familiar with its functions (see the sections 'Exploring the App' and 'App Settings').

Plugging in the Adapter

Plug the Adapter into the data port of your vehicle.

The Adapter sends the data from the vehicle's onboard computers via a wireless Bluetooth connection. Bluetooth has a range of 20 to 30 feet but in most cases the Adapter will need to be much closer to your mobile device. It cannot transmit though metal so don't use the data port on the engine at the rear of your vehicle.

The Adapter is keyed such that you have to rotate it until the male key aligns with the female key in your diagnostic connector. You'll feel it drop in. The Adapter also has a locking ring that has to mate with the diagnostic connector so you may have to rotate this until you can push the Adapter all the way in. Once the Adapter is all the way in, you can lock it by twisting the locking ring.

Note, the Adapter's locking mechanism is designed to be used in heavy duty vehicles such as highway trucks and construction equipment and can be very tight to lock. To ease locking and unlocking your Adapter, you can trim away the lower half of the three nipples located on the inside of the ring (see picture below). Be careful that you don't trim too much of the nipples otherwise the Adapter will not lock, in which case you will need to replace the locking ring.

Checking the LEDs

After plugging in the Adapter, the LEDs should be blinking blue indicating that the Adapter is ready for you to connect the App. If the LEDs are not blinking blue, then there is no power to the Adapter. Check your Adapter connection and if there still is no power, then try the suggestions in the Troubleshooting section.

See the Adapter LEDs section for descriptions of the LED colors and their meanings.

Connecting the Adapter

Pairing the Adapter

Optionally pair your Adapter.

The App is designed to automatically detect the Adapter and connect to it but if you are having difficulties connecting the Adapter you can try manually pairing it first.

Note that for Apple devices there is no pairing and you will not see the Adapter under Bluetooth settings until after the App connects to it.

Pairing the Adapter is different between the two types of Adapters - Bluetooth Classic and Bluetooth Low Energy (BLE). You can tell them apart by looking at the circuit board through the opaque cap on the Adapter. Bluetooth Classic will have a rectangular module on the circuit board and Bluetooth Low Energy will have a square module (See Adapter Styles above).

For Bluetooth Classic Adapters, pairing can be accomplished on Android and Windows platforms. To pair a Bluetooth Classic Adapter follow these steps:

1. Go to your device's Bluetooth Settings.
2. Ensure Bluetooth is turned on.
3. Refresh, Search, or Add Devices. Note, on Windows it will take a significant amount of time to find the Adapter.
4. Select 'BlueFire' under Paired Devices.
5. Wait for pairing to finish.

For Bluetooth Low Energy Adapters, pairing is not required.

Note, for Android devices you may see 'BlueFire LE' in the available devices list but pairing will either generate an error or will do nothing.

Starting the App

Open the App and set your Bluetooth connection in the App Settings page. The default is to 'Use Bluetooth Low Energy (BLE)'. If you have a Bluetooth Classic' (rectangular module) Adapter, you need to uncheck 'Use Bluetooth Low Energy (BLE)' and check 'Use Bluetooth Classic'. See Adapter Styles above for pictures of the modules.

Note, if neither Bluetooth connection settings are set, the App will attempt a BLE connection first then try a Classic connection. It will set the 'Use Bluetooth Low Energy' or the 'Use Bluetooth Classic' option according to which one was connected.

Connecting the Adapter

Verifying App Settings

Ensure you're going to retrieve data from the correct ECM data bus. Go to the Settings page and verify that the data bus settings (J1939, J1708, OBD2) are correctly set. See the App Settings section for a detailed explanation of these settings.

Note, the App defaults to J1939. If you have a 6-pin Adapter or an older motorhome with a 6-pin diagnostic port, you need to turn J1939 off and J1708 on.

Connecting the Adapter

Connect the App to the Adapter with the Connect button on the Home page.

Turn your ignition off if it's on (you'll turn it on later). This is to show you what the Adapter looks like with the ignition off.

Tap the Connect icon on the Home page. The App will initiate a connection to the Adapter and if successful, the Adapter's LEDs will start blinking green. This means that the Adapter is connected to the App and waiting for ECM data. Note, with the ignition key off, the ECMs are powered down and not transmitting any data.

Turning on the Ignition

Turn your ignition on. You'll see the Adapter's LEDs go solid blue. This means that the Adapter is connected to the App and receiving ECM data.

Updating App Settings

After connecting to the Adapter, go to the Settings page and check the 'Connect to Last Adapter' option. This will speed up future connections. However, if you're using multiple Adapters then you do not want to set this option.

Note, in actual operation it does not matter whether the ignition is off or on when connecting the Adapter.

J1708 Data Bus

Both a 6-pin and a 9-pin diagnostic port has the capability of retrieving J1708 data using our 6-pin and 9-pin Adapters. The 6-pin Adapter can only retrieve J1708 data while the 9-pin Adapter can retrieve both J1708 and J1939 data. It is common for vehicles 2004 and newer to have both data buses thus the need for the 9-pin Adapter to be able to connect to both.

The 6-pin Adapter is no longer available but you can still connect to a 6-pin diagnostic port by using a 9-pin Adapter and a 6-pin to 9-pin converter connector or cable. Links to the converter connector and cable are on our website/store.

Important - For 9-Pin Adapters BlueFire Apps defaults to connecting to the J1939 data bus only. You must check the Setting 'Connect to a J1708 Data Bus' to connect and retrieve J1708 data.

Important - The Adapter firmware must be at least 3.17. This is shown in the About page after connecting to the Adapter. You will be alerted if this is the case.

J1708 Data Retrieval

The J1708 data bus was the first electronic data bus to be used in heavy duty vehicles. The Society of Automotive Engineers (SAE) developed a specification that defined the hardware (J1708) and software (J1587) for OEM engineers to program their ECMs. This specification and its implementation improved over time so the newer the vehicle the better chance of having ECMs that adhere to the specification.

The firmware in our 6-pin and 9-pin Adapters attempts to cater for the various anomalies in ECM implementations of the specification but it is not always successful. The possible results in an incomplete specification implementation include

- Erratic data
- Incomplete data
- Phantom fault reporting
- Actual engine or other ECM faults.

BlueFire Apps tries to moderate the first three but the last one is the most serious as it can cause your vehicle to stop operating. If you get a check engine light (ECM fault) while connected to the Adapter it will most likely go off after you disconnect and unplug the Adapter. Below are some things you can try to alleviate this problem.

1. Go to the App's Settings page.
2. Uncheck 'Monitor Faults'.
3. Check 'Ignore Vehicle Info'.

4. Check 'Ignore Transmission Data'.
5. Set the Adapter Minimum Interval to 1000.
6. If the above does not solve the problem do the following:
7. Go to the System Settings page.
8. Uncheck Keep J1708 Port Open (Warning! this may worsen the situation and even cause engine faults and your physical dash gauges to malfunction).
9. Increase the Adapter J1708 Bus Idle Time by 5 milliseconds (eg. 10.4 to 15.4). You can continue to increase this setting. If this fixes the faults then decrease it by 1 ms increments until the faults reappear then go up 1 or 2 milliseconds. Note, this may reduce the response time for some ECM data.

If one or more of these changes fixes your problem please let BlueFire Support know by emailing them with your vehicle configuration and what you did to fix the problem.

If none of these suggestions fixes the issue and you continue to get the check engine light then unfortunately the Adapter will not work for you and you can send it back for a full refund.

Showing J1708 Data

The J1708 hardware in the Adapter has an internal buffer that is limited in size.

When the App is connected to the Adapter and your ignition is on, J1708 data is retrieved and placed into this buffer before it is transmitted to the App. When the buffer fills up the Adapter firmware must clear the buffer and restart J1708 data retrieval.

You will notice this as a slight pause in the data you have showing in an App page or on your custom dash. This usually occurs every 15-20 minutes. If you're not looking for it, you'll probably not notice it.

If by chance the data does not start updating then you will need to disconnect and reconnect the Adapter. You can use the 'Reconnect' Button gauge for this purpose.

OBD-II Data Bus

If you have a vehicle with an automotive engine (Ford, GM, Mercedes, etc) and an OBD-II diagnostic port (rectangular instead of round) you will also need an OBD-II to J1939 converter connector to use with our J1939 Adapters. Links to manufacturers of these converter connectors can be found on our website/store.

Most OBD-II vehicles 2015 and newer will work with our Adapter. Older vehicles may or may not work.

OBD-II ECMs do not transmit as much information as J1939 or J1708 ECMs. The data items that may be available are RPM, Speed, Odometer (Distance), Oil Temp, Intake Temp, Coolant Temp, Boost Pressure, Fuel Level, Fuel Rate, Total Engine Hours, Engine Load, Engine Torque, Driver Torque, Accelerator Pedal Position, Throttle Position, Battery Voltage, and Faults.

If you do not receive any data you can try changing the System Settings option 'OBD-II CAN Bus Settings' however you may cause an ECM fault if the setting is incorrect. In most cases the fault will reset itself when you disconnect and unplug the Adapter.

Troubleshooting

Connecting the Adapter

Note, the first time you start the App, you need to be connected to the Internet in order for the Home page's Connect button to be enabled.

If the App does not connect to the Adapter, try the following:

- Ensure the Adapter is blinking blue. Note, if your Adapter is blinking red continuously, the Bluetooth chip is faulty and you need to return the Adapter for repair.

  If the Adapter is not blinking blue when you plug it in or when you apply power to it try the following:

  1. Unplug the Adapter from your diagnostic port.
  2. Unscrew the aluminum cap.
  3. If your Adapter is a gray 6-pin or black 9-pin, it will have a rubber bumper on the top board. Save it. If it's no longer usable, replace it with something similar. This keeps the top board from separating from the bottom board.
  4. Plug a powered USB cable into the lower board. Be careful that you don't separate the two boards.
  5. If the Adapter still does not light up, contact BlueFire Support. Most likely the Adapter firmware has been corrupted and needs to be re-flashed. Note, this can occur if you unplug or power down the Adapter while the LEDs are solid red (not blinking red).
  6. BTW, this is a good way to test Adapter connection as when the Adapter is powered by a USB cable, it will act as if it is plugged into your vehicle with the ignition off.
  7. When you are finished troubleshooting, very carefully screw the aluminum cap back onto the Adapter. Watch the top board through the translucent cap to ensure that it is not turning also. If the top board is turning, unscrew the cap slowly and check for the correct positioning of the 8 connector pins connecting the top board to the bottom board and that the two boards are tightly connected.

- Ensure Bluetooth is turned on and for Android that BlueFire Apps has the proper permissions in your mobile device.

  - Apple Devices - You need to have Bluetooth turned on and authorized.

    1. Settings / Bluetooth
    2. Settings / BlueFire Apps / Bluetooth

Troubleshooting

- Android Devices - You need to have Bluetooth turned on and granted permission for the App to use your Location and with Android 12+ you need to grant permission for the App to determine the position of nearby devices.
    1. Settings / Connected Devices / Bluetooth
    2. Settings / Apps and Notifications / BlueFire Apps / Permissions / Location / Always (or Allow all the Time)
    3. Settings / Apps / BlueFire Apps / Permissions / Nearby devices / Allow (Android 12+ only)
- Windows Devices - You need to have Bluetooth turned on.
    1. Settings/Apps/Apps & features/BlueFire Apps/Advanced options/Radios

- Verify you have set the following Bluetooth settings in the App's Settings page correctly. See the 'App Settings' section for more detail.
    - Auto Connect

      Don't set this until your connection is rock solid.
    - Show Dash on Adapter Connection

      Don't set this until your connection is rock solid and you've completed and tested your dash design.
    - Use Bluetooth Low Energy (BLE)

      Set this if you have an Apple/Android/Windows Adapter. This Adapter has a square module on the top board (See Adapter Styles above). Note, this will not be shown if you're using an Apple device or if 'Use Bluetooth Classic (2.1)' is checked. You must uncheck 'Use Bluetooth Classic (2.1)' to set this option.
    - Use Bluetooth Classic (2.1)

      Set this if you have an Android/Windows Adapter (not Apple). This Adapter has a rectangular module on the top board (See Adapter Styles above). Note, this will not be shown if you're using an Apple device or if ' Bluetooth Low Energy (BLE)' is checked. You must uncheck Bluetooth Low Energy (BLE)' to set this option.
    - Use Bluetooth Classic (2.1)

      Set this if you have an Android/Windows Adapter (not Apple). This Adapter has a rectangular module on the top board (See Adapter Styles above). Note, this will not be shown if you're using an Apple device or if ' Bluetooth Low Energy (BLE)' is checked. You must uncheck Bluetooth Low Energy (BLE)' to set this option.

Troubleshooting

- Connect to Last Adapter

  If this is checked, uncheck it. If you successfully connect to the Adapter you can then re-check it. This sets your App to connect only to the last Adapter the App connected to. This will keep the App from accidentally connecting to another nearby Adapter. This will also speed up the connection as the App does not have to search for the Adapter. You must initially connect to the Adapter before you can set this.

- Bluetooth Discovery Timeout

  Clear this field and it will default to a specific value according to whether you're using a BLE or Classic Adapter. This is the time (in seconds) for Bluetooth to discover (find) the Adapter. In most cases this is fairly quick. This is similar to your mobile device's Bluetooth device list but in many mobile devices, the BlueFire Adapter will not show up until a connection is established. This is true for all BLE Adapters. You will know that the App is in the discovery phase as the Home page connection status will show 'Discovering'.

  If the Adapter is not paired to Bluetooth, pairing will occur and you may see a pairing request. This timeout value does not take into account the time to pair the Adapter, it is strictly the time to discover the Adapter (paired or not). Note, for Apple devices, there is no pairing.

  If you are in a crowded area with many Bluetooth devices around, Discovery could take longer as the App has to interrogate all the Bluetooth devices to find the BlueFire Adapter.

- Adapter Connection Timeout

  Clear this field and it will default to a specific value according to whether you're using a BLE or Classic Adapter. This is the time (in seconds) for Bluetooth and the App to connect to the Adapter after discovering it. This can take longer than discovery and has a greater chance of failing. You will know that the App is in the connection phase as the Home page connection status will show 'Connecting'. If the connection continues to fail, try increasing this. For Windows computers sometimes it can take up to 30 seconds to establish the connection.

- Adapter Connection Attempts

  Set this to at least 5 (the default) to allow for multiple connection attempts. For the first time connecting, it may take multiple attempts to establish the connection.

Troubleshooting

- Bluetooth Recycle Attempt

  Clear this field and it will default to the Connection Attempt number when Bluetooth will be recycled (turned off and back on). This may help with reconnecting the Adapter but will turn Bluetooth off and back on. Note, this will not be visible on Apple devices since the App is not allowed to turn Bluetooth off or on.
- Adapter Reconnection Attempt

  Set this to at least 2. This will turn Bluetooth off and then back on before the Adapter tries a second attempt to connect. Note, this is not available for Apple devices as Apple does not allow the App to turn Bluetooth off or on.
- Recycle Bluetooth

  If the Adapter connects initially but then does not connect after that, set this on as this will turn Bluetooth off and then back on after the Adapter disconnects. This is recommended for Windows computers. Note, this is not available for Apple devices as Apple does not allow the App to turn Bluetooth off or on.
- Adapter Minimum Interval

  Try setting this to 100 and bump it an additional 100 each time it does not connect. You should not need to go over 300 though.

- If you're getting the 'Lost Bluetooth' alert, check your Bluetooth signal strength. See the 'Bluetooth' section for how to check the signal strength.
- Try turning your mobile device's Bluetooth off and then back on.
- Try un-pairing (forget) any other Bluetooth devices that are paired to your mobile device.
- If you're using a Bluetooth Classic (2.1) Adapter, ensure that there is not an older previous Classic Adapter paired with your mobile device.
- Try closing and re-opening the App.
- Try power cycling your mobile device. This is especially true for Windows computers.
- For Android devices, perform a soft reboot and then go through all your apps one at a time and clear the cache.
- If you're using a Windows computer and have a USB drive or SD card inserted, remove them and see if the App can connect to the Adapter. It has been reported that on some Windows computers, the USB and SD ports can affect the Bluetooth connection by causing a conflict with the two COM ports that Bluetooth uses.

Troubleshooting

- Try resetting the Adapter. See the Factory Reset section under the Data Adapter chapter.
- Ensure your mobile device has all its updates and if possible, perform a factory reset on your mobile device. While this is a bit radical, it has worked for others.
- If the App connects to the Adapter and you have it connected to USB power then unplug the USB cable, screw the cap back on and plug it back into your diagnostic port.
- Connect to the Adapter that is plugged into your diagnostic port. If the Adapter fails to connect, you most likely have an issue with the Bluetooth signal reaching your mobile device. You can try moving your mobile device or using an Adapter extension cable.
- If all else fails, contact BlueFire Support at support@bluefire-llc.com for assistance.

Retrieving Data

Important Note - If you are using a 9-Pin Adapter and a 6-pin to 9-pin converter connector or cable to connect to a 6-pin diagnostic port, you must uncheck the Setting 'Connect to a J1939 Data Bus' and check 'Connect to a J1708 Data Bus'.

Turn your vehicle's ignition on.

> The Adapter LED's should change from blinking green to solid blue. If the LEDs stay blinking green then the Adapter is not receiving any data from your ECMs. Check the App's settings to ensure you have the correct J1939/J1708 Data Bus connection set. If the LEDs are still blinking green contact BlueFire Support at support@bluefire-llc.com for assistance.

Check the Drive and Repair pages for data.

> If any data shows 'NA' then that data is not being transmitted by your ECMs. You can try turning J1708 on to see if the 'NA' data is on that data bus, but if it is not, turn J1708 off. Also, check the Adapter firmware version on the About page. If it's less than 3.18, you need to update it. See this link for instructions.

If the App keeps disconnecting and re-connecting or if data retrieval is slow, try the following:

- Ensure you have a clear path between the Adapter and your mobile device for the Bluetooth signal to send and receive data. The signal can bounce around but it will not go through metal or human body parts (hands and legs). Check the Bluetooth signal strength for a decent signal. See the 'Bluetooth Calibration' section on checking the signal strength.
- Ensure there are no other Bluetooth Apps running on your mobile device. BlueFire Apps is a heavy user of Bluetooth and requires a dedicated connection.
- Check to see if there is any reason your mobile device is turning Bluetooth off.

Troubleshooting

- Change the following Settings temporarily:
    - Uncheck 'Auto Connect'.
    - Uncheck ' Show Dash on Adapter Connection'.
    - Uncheck 'Connect to Last Adapter'.
- Connect manually and see if the connection becomes unstable just with the Home page showing, then try the Drive page, then your Dash (if you have one). This will give you an indication whether the issue is data related or Bluetooth related.
- Ensure Bluetooth is reset prior to connecting the Adapter. Note, this is not available for Apple devices as Apple does not allow the App to turn Bluetooth off or on:
    - Set 'Bluetooth Recycle Attempt' to 2.
    - Check 'Recycle Bluetooth'.
- Reduce the Bluetooth traffic by changing the following Settings:
    - Uncheck 'Monitor Faults'.
    - Uncheck 'Show Faults on Startup'
    - Check 'Ignore Motorhome/Truck Info'.
    - Check 'Ignore Aftertreatment'.
    - Check 'Ignore Transmission Data'.
    - Set 'Adapter Minimum Interval' to 300 or greater.
    - Set 'RPM Interval' to 100 or greater.
    - Uncheck 'Connect to a J1708 Data Bus' if not needed.
- Check for other App that may be interfering with data retrieval. It is possible that there are other processes occurring that can slow down the App or that your mobile device may not have enough processing power to run the App efficiently. This is particularly true if the App is running on a Windows computer and you installed the App from the Microsoft Store.
- If the connection improves after you've made some of the above changes, go back and remove the changes you made one by one until the connection becomes unstable again then change it back.
- If you're using a Windows computer and have a USB drive or SD card inserted, remove them and see if the connection improves. It has been reported that on some Windows computers, the USB and SD ports can affect the Bluetooth connection by causing a conflict with the two COM ports that Bluetooth uses.
- Check your diagnostic port wiring for a possible short. This can be a short in any of the wires and unfortunately very difficult to find. The most likely wires are power and ground.

You can use the App Setting 'Test the Adapter' to check the connections between the Adapter, the diagnostic port, and the ECMs.

If the App connects fine but data retrieval is slow you may need to adjust the Performance settings (see the Performance section below).

Showing Data

When the App is connected to the Adapter and your ignition is on, ECM data will show in real time on whichever App page or custom dash you have up. If you notice the data pausing or stop updating this can be caused by the following reasons.

- Corrupted Bluetooth data from the Adapter is received.
- Unable to temporarily communicate with the Adapter (Bluetooth).
- The Adapter's J1708 internal hardware buffer fills up (usually about every 15-20 minutes).
- The App's Adapter Data Buffer fills up (see The Adapter Data Buffers section).
- The Adapter connection fails and is successfully reconnected. An alert will be shown indicating the reason for the connection failure.

Creating your Dash

Before creating your dash, you should review and become familiar with the 'Customizing Your Dash' and 'Customizing Gauges' sections first.

Open Customize Dash Page

Open the Customize Dash page by one of the following methods:

- Tap on the Dash icon on the Home page. If you do not have a custom dash defined, the Customize Dash page will be shown. If you already have a custom dash defined, double tap any open space in your dash and the Customize Dash page will be shown.
- If you do not have a custom dash defined when you go to the Customize Dash page a welcome message will be displayed showing you the following options for creating a new dash:
    - Create a dash yourself from scratch.
    - Download an existing dash from the Dash Repository using the 'Download Custom Dash' option.
    - Import a dash from a friend using the 'Import Custom Dash' option.

Create a Dash

If you're planning on creating your own dash or modifying someone else's dash, you should familiar yourself with the Text, Button, and Graphic gauges. From the Customize Dash page, do the following:

1. Tap 'Add or Remove Gauges'. This will take you to the Add/Remove Gauges page.
2. Tap 'Add or Remove Text Gauges'.
3. Select (tap) one Text gauge. The Odometer is a good one.
4. Tap 'Add or Remove Text Gauges' again.
5. Tap 'Add or Remove Graphic Gauges'.
6. Select (tap) two Graphic gauges. RPM and Speedometer are good choices.
7. Tap 'Add or Remove Graphic Gauges' again.
8. Tap 'Add or Remove Button Gauges'.
9. Select (tap) one Button gauge. The Back button is a good one.
10. Tap 'Add or Remove Button Gauges' again.
11. Tap the 'Save' button.
12. Go back to the Customize Dash page.
13. Tap the 'Show Dash' button.
14. Drag the gauges so you can see all three.

15. Become familiar with all the options available with the gauges.
    a. Double tap the Odometer Text gauge to go to the Customize Gauges page.
    b. Explore all the options available with Text gauges.
    c. Go back to your dash.
    d. Double tap the Back Button gauge to go to the Customize Gauges page.
    e. Explore all the options available with Button gauges.
    f. Go back to your dash.
    g. Select the Graphic gauge (RPM).
    h. Explore all the options available with Circular gauges.
    i. Spend a lot of time here so you'll know how best to design your dash.
    j. Select the other Circular gauge (Speedometer).
    k. Change it to a Linear gauge.
    l. Explore all the options available with Linear gauges.
    m. Spend some extra time here so you'll get familiar with Linear gauges.
16. Go back to the Customize Dash page.
17. Add a few more Graphic gauges and play around with the Z-Order. See the 'Z-Order Explained' and 'Changing Z-Order' sections for how to move the Z-Order.
18. Check out the Custom Colors options in the Customize Dash and Customize Gauges pages. Setting a custom color in the Customize Dash page will assign that color to all existing gauges and any new ones. Setting a custom color in the Customize Gauges page assigns that color only to that gauge.
19. Play around with the Range Alerts of the RPM and Speedometer gauges.
20. Clear your dash and start designing your real custom dash.

Modify Your Dash

Design or modify your custom dash (from the Customize Dash page).

1. Check out the available custom dashes in the BlueFire Dash Repository (see the 'Customize your Dash' section).
    a. Tap the 'Download Custom Dash' option.
    b. Browse and select a custom dash that you like.
    c. Tap the 'Show Dash' button. Note how well the custom dash fits.
    d. Go back to the Customize Dash page.
    e. If the downloaded dash did not fit, you can resize the dash to fit your mobile device. Optionally you could select 'Auto Resize' prior to downloading the dash (see the 'Customize your Dash' section).

2. If you want a very simple dash just using Graphic gauges and no Text gauges, then use the 'Show Simple Dash' option.
    a. Select 'Show Simple Dash.
    b. Scroll down and set the 'Gauges Per Portrait Row' or Gauges Per Landscape Row' depending on your mobile device orientation.
    c. Add your Graphic gauges.
    d. If you have more gauges than can fit in your mobile device screen, select 'Scroll the Dash Page'.
    e. Tap the 'Show Dash' button and your gauges will be shown in a grid (rows and columns).
3. Otherwise, you want a custom dash with Text, Button, and Graphic gauges placed precisely where you want to see them.
    a. Optionally download a custom dash.
    b. Use Gauge Templates to help build your dash (see 'Customizing your Dash').
    c. Add Text, Button, and Graphic gauges (see 'Customizing your Dash').
    d. Tap the 'Show Dash' button.
    e. All your added gauges will be stacked on top of each other. Note, you do not have to add all your gauges at the same time.
    f. Move them to where you want them.
    g. Double tap a gauge to customize it further.
    h. Go back to the Customize Dash page.
4. Save your customize dash (see Step 4 below).
    - Note, you can create and save sub-dashes that are grouped and then merge those sub-dashed to create a custom dash where the grouped sub-dashes can be moved around as one unit (see 'Customizing your Dash').

Save Your Dash

Save your custom dash.

1. From the Customize Dash page, scroll down and tap on the 'Save Custom Dash' option.
2. A default dash name will be displayed. It is best to change this to a name more relevant to your dash as you may want to share or upload it later.
3. Enter notes about your dash. It is a good idea to enter anything special about your dash that others will need to understand it. A good example is any grouped gauges with their group numbers and any combined gauges you have created. Plus, these notes will help remind you of special things you did that you may forget later on.

Customizing your Dash

Make it Easy and Comfortable

You don't have to be connected to the Adapter to build your dash. You can do it from the comfort of your sofa or lounge chair.

Get yourself one of those touch sensitive pens that allow you to touch the display of your device. They make it much easier to drag and drop gauges.

Demo Data vs Connected Data

When the App starts for the first time, it defaults to showing Demo data (Demo Mode). This is where all the pages show data that simulates connected to an Adapter. For designing your dash, this is handy since it helps you define the size of the gauge. It also allows you to see and demonstrate the capabilities of the App without having to have an Adapter.

If Demo Mode is on when you connect to the Adapter, an alert will be shown telling you that Demo Mode is being turned off.

If you are connected to the Adapter, the data shown is what is being retrieved from your vehicle ECMs. When you disconnect from the Adapter, whichever pages that were shown with ECM data will maintain that data until you close the App. If Demo Mode is on, you will see Demo data otherwise you will see the previous ECM data. Note that ECM data is not persisted when restarting the App.

The exception to showing Demo data after starting the App is if you have started a trip and the trip is in progress. In this case the App will start and only show your trip data in all the pages until you connect to the Adapter. This allows you to cancel or end the trip without having to connect to the Adapter.

Once your dash is designed and you're ready to rock-n-roll it is recommended that you turn off Demo Mode so you don't get confused when you start the App and see the Demo data especially your trip data.

You can turn Demo Mode on and off with the 'Demo Mode' option in the Settings page.

Data Values

The data value that is shown in your custom dash or in the other App pages will either be Demo data, ECM data, or 'NA' (not available).

If Demo Mode is turned on, then the data value will always be Demo data.

Customizing your Dash

In the Customize Gauges page, the data value will always be Demo data to allow you to design the gauge with the proper amount of space for the value.

When you are connected to the Adapter or previously connected to the Adapter, the data value will either be ECM data or 'NA'. You can change the 'NA' text with the App Setting 'Data Not Available'.

Z-Order Explained

When the View Dash page is displayed, the gauges are 'stacked' on top of each order, then positioned. This 'stack' is called the Z-Order. It refers to the Z axis which is the 3-D depth of the gauge while the X axis is the 2-D width and the Y axis the 2-D height. So the Z-Order is the order of the gauges as you are looking down at them from the top. A gauge that is underneath another gauge cannot be grabbed for dragging unless a portion of it is sticking out from the top gauge. When you define your dash and add gauges, Button gauges have a higher Z-Order than Text Gauges and Text gauges have a higher Z-Order than Graphic gauges. This allows you to move Button gauges over any gauge and move Text gauges over Graphic gauges. This is the same for gauge visibility. A gauge that is behind another gauge will be obscured by the gauge that's on top of it. Note that if the gauge's background color is the same as the dash's background color, the gauge's background will be transparent to the underneath gauge.

Graphic gauges are square so a circular gauge that is half a gauge still occupies the same Z-Order space as a full gauge. Likewise for Linear gauges, they occupy the same square space if they are horizontal or vertical. You should take this into account when designing your dash.

Text gauges are stacked according to the order they are added. So, to show a smaller Text gauge over a larger one, the smaller gauge must be before the larger gauge in the Dash Customize page's 'Add or Remove Gauges' Z-Order list. See the 'Changing the Z-Order' section for how to move the gauge to the new Z-Order.

A good example is where you have added three gauges, Gauge1, Gauge2, and Gauge3. In the Z-Order, Gauge1 will be above Gauge2 and Gauge3, and Gauge2 will be above Gauge3. In the View Dash page, if you move Gauge1 over Gauge2 or Gauge3, Gauge1 will obscure Gauge2 and Gauge3, and you will not be able to move Gauge2 or Gauge3. Now if you want Gauge2 to be on top of Gauge1, go back to the Dash Customize page and tap 'Add or Remove Gauges'. This brings up a list of all possible gauges with your dash gauges highlighted. Tap on the Z-Order button and you'll see a list of Gauge1, Gauge2, and Gauge3. Move Gauge2 to be above Gauge1. Your list will now show Gauge2, Gauge1, and Gauge3. Go to the View Dash page and move Gauge2 over Gauge1 and you'll see that Gauge2 now obscures Gauge1. If you set the background color of

these gauges to something other than the dash's background color, the obscurity becomes more apparent.

Dash Orientation

You normally design your dash for the orientation you want your mobile device to be in for viewing your dash. You can design multiple orientation dashes and load them according to your device's orientation. If you rotate your device, your dash will be shown the same as it was designed but in the orientation of your device. If you want your dash to stay in the same orientation, you can set the Customize Dash option 'Lock Dash Orientation'. If you want the App to stay in the same orientation that you started with, you can set the App Settings 'Lock App Orientation' option. Note that the 'Lock Dash Orientation' overrides the 'Lock App Orientation'.

Interacting with you Dash

Here are ways to interact with your gauges on the View Dash page:

- Double tapping a gauge will show the Customize Gauges page.
- A single tap in open space will return to the previous page. Note, the Customize Dash option ' Ignore Single Dash Tap' will disable this feature to keep you from accidentally tapping and leaving the dash.
- A double tap in open space will show the Customize Dash page.
- A single tap on a backdrop image will show the Customize Dash page.
- Single tapping a locked Trip gauges the Trip page.
- Single tapping a locked Engine Status gauge will show the Faults page if there are faults otherwise the Drive page will be shown.
- Single tapping a locked Dual Time will switch between local and home time. Note, 'Local' or 'Home' will only show if the Gauge Name has not been changed.
- Locking a gauge disables dragging and dropping, enables range alerts, and allows single tapping of Trip gauges, Engine Status, and Dual Time.
- To drag and drop just one gauge while the others are locked, lock the gauges in Customize Dash, then unlock the specific gauge in Customize Gauges.
- Use Snap to Grid, and Size to Grid for a quick start in figuring out the right size for your gauges.

Creating a Quick Simple Dash

An easy way to quickly create a simple dash of rows and columns of your Graphic gauges is to first use the 'Show Simple Dash' option in the Customize Dash page along with the 'Gauges Per Portrait Row' or Gauges Per Landscape Row' options. When you have the gauges the way you like, turn off

the option, and group and lock the gauges. You can then add Text gauges and resize and move the Graphic gauges around to fit in your new custom dash.

Adding Gauges

You start building your custom dash by adding gauges. From the Customize Dash page, tap the 'Add or Remove Gauges' option. A page will be shown where you can select which type of gauge you want to add. From there, a list of all available gauges will be shown. You can select all the gauges you want in your custom dash. Tap the Z-Order button to arrange the gauges in the proper Z-Order for display in your dash (See 'Z-Order Explained' above). Then tap the gauge selection again and the gauge type selections will be shown. Repeat for each type of gauges you want in your dash.

When you've added all your gauges, tap the 'Save' button and go back to the Customize Dash pages so you can start customizing your new dash.

For adding gauges to an existing dash, repeat the process above. The list of all available gauges will be shown and the gauges that are already in your dash will be highlighted. Add the new gauge as you would normally do.

Removing Gauges

To remove gauges from your dash, follow the procedure for 'Adding Gauges' and when the list of available gauges is displayed with your existing gauges highlighted, tap the gauge you want to remove. The gauge will be removed and shown as available. Note, if you attempt to remove a gauge with multiple occurrences, an alert will be shown warning and asking you if you want to remove all occurrences of the gauge. If you do not want to remove all occurrences, you can remove individual occurrences from the Z-Order page.

To remove a gauge from the Z-Order page, select the gauge and tap the 'Remove' button.

Duplicating Gauges

You can create multiple occurrences of a gauge. This is common with 'Text' and 'Button' gauges but can be applied to 'Graphic' gauges as well. The most common use is the 'Text' gauge where you need multiple text or images throughout your dash. Other examples would be multiple 'Trip Meter' gauges for use during a long trip, multiple 'Engine Status' gauges for each page of a multi-page dash, a 'Tire Pressure' gauge for each tire, and two 'Speedometer' text gauges, one to use in a grid and another in the 'Speedometer' graphic gauge (if you don't like the default text value).

Customizing your Dash

To add an additional gauge, first add the gauge and then tap the 'Add+' button. A duplicate gauge will be added to your dash. You can see all the gauges added in the Z-Order page where you can also add more occurrences of the gauge using the 'Add+' button there.

Changing the Z-Order

To better understand Z-Order, See the 'Z-Order Explained' section.

The gauges on the Z-Order page are in the highest to lowest z-order. This means that the first gauge listed is above all other gauges and so forth.

To move a gauge to a higher z-order, tap the gauge you want to move, then tap the move button, and then tap the gauge you want the first gauge to be above.

Note, the 'Z-Order' button will not show until you have more than one gauge added to your dash.

Moving Gauges

You can move gauges around your dash by dragging and dropping them. The gauges must be unlocked before you can move them.

Note, Android does not support 'Drag & Drop' in a scrollable dash. To move or resize your gauges you must be out of scroll mode. You can switch between 'Page Scrolling' and 'Drag & Drop' by double tapping on an open space in your dash.

Aligning Gauges

To align gauges in your custom dash, use the 'Snap to Grid', 'Size to Grid', and 'Snap to Grid Sizes' options in the Customize Dash and Customize Gauges pages. You can also do very fine pixel alignment with the Gauge Location X (vertical), and Y (horizontal) values in the Customize Gauges page.

Important Note - When your dash is shown, both 'Snap to Grid' and 'Size to Grid' options will occur on all unlocked gauges that have not already been aligned to the grid. The 'Size to Grid' option will be set off after the gauge has been sized. The 'Snap to Grid' option will remain on so you can move the gauge around and have it snap to the grid.

To better understand 'Snap to Grid' follow these steps below:

1. Ensure Demo mode is on:
    - End or cancel any existing trip.
    - Check the 'Demo Mode' option in the Settings page.
2. Go to the Customize Dash page and clear any existing dash (make sure you save it if you want to go back to it).

3. Check the 'Snap to Grid' option and set the 'Snap to Grid Sizes' to 50 x 50.
4. Create a Box gauge (see 'Creating a Box Gauge' section) and set the Frame Size to 50 x 50.
5. Create three more Box gauges the same as the one before.
6. Create an RPM Text gauge and check all Borders. Leave the Border Width to the default. The borders represent the area of the gauge that will snap to the grid.
7. Go to your dash. All the gauges will be snapped to the grid when they are shown.
8. Arrange the Box gauges in a 2 x 2 grid. This simulates your dash grid of 50 x 50.
9. Move the RPM gauge around and see it snap to the grid. The top gauge will be aligned with the top of the nearest grid box and the left side of the gauge will be aligned to the left side of the nearest grid box. The nearest grid is relative to the top left corner of the gauge (think of the gauge inside a rectangular box).
10. Create more gauges and arrange them to see how Snap to Grid can help you create a nice looking dash.

To better understand 'Size to Grid' follow these steps below:

1. Ensure Demo mode is on:
    - End or cancel any existing trip.
    - Check the 'Demo Mode' option in the Settings page.
2. From the Dash page, double tap the RPM gauge and go to the Customize Gauges page.
3. Check the 'Size to Grid' option.
4. Save the gauge and go back to the Dash page.
5. The gauge will be sized to the grid when it is shown on your dash. The gauge's Fonts and Spacings will be resized according to how much the gauge was resized.
6. After the gauge is shown and resized, the 'Size to Grid' option will be turned off.

Note, the 'Size to Grid' option can resize the gauge's Fonts and Spacings differently between gauges. A gauge that is near grid alignment will have smaller Fonts and Spacings than a gauge that is far away from grid alignment. To set Fonts and Spacings to be the same for all gauges, use the 'Template Gauge' option in the Customize Gauges page. And to resize all gauges the same amount use the 'Resize Dash' option in the Customize Dash page.

Grouping Gauges

Gauges can be grouped together so that you can move them as a single unit. You can have multiple groups. The best way to create groups of gauges is to do the following:

1. Clear your custom dash.
2. Create your first group of gauges.
3. Assign them a unique group number.

4. Save the group of gauges as a sub-dash (give it a name with the group number).
5. Repeat the above for all your groups.
6. Clear your dash.
7. Create your custom dash.
8. Merge in all your groups and move them to where you want them.
9. Save your custom dash.

Resizing your Dash

Follow these steps to resize your dash along with all the gauges in the dash:

1. Design and create your dash or import/download one.
2. Optionally save your dash in case the resize isn't right.
3. Use the 'Auto Resize' option to resize the dash to your current display size.
4. You can also manually resize your dash with the 'Resize Dash' option. Leave the 'Resize Group' value as 0 and set the 'Resize Factor' to a decimal factor for resizing (eg. a value of .5 will resize your dash in half where a value of 2 will double the size of your dash.
5. Show your dash to view the resized version.

Moving your Dash

To move all the gauges in your dash at one time follow these steps:

1. Design and create your dash or import/download one.
2. Resize the dash to fit your mobile device (if you imported/downloaded it).
3. Optionally save your dash in case the move isn't right.
4. Uncheck the 'Lock All Gauges' option.
5. Using the 'Group Number' option, set the 'Group No' to 0.
6. Tap 'Update All Gauges'.
7. Change the 'Group No' to 1.
8. Tap 'Update All Gauges'.
9. Show your dash.
10. Drag any gauge and all the other gauges will follow when you've finished dragging.

Center your Dash

You can center your dash by following these steps:

1. Design and create your dash or import/download one.
2. Resize the dash to fit your mobile device (if you imported/downloaded it).
3. Optionally save your dash in case the centering isn't right.

4. Make sure it has one gauge that will be the center point. You could even place a temporary text gauge for this.
5. Uncheck the 'Lock All Gauges' option.
6. Using the 'Group Number' option, set the 'Group No' to 0.
7. Tap 'Update All Gauges'.
8. Change the 'Group No' to 1.
9. Tap 'Update All Gauges'.
10. Show your dash.
11. Double tap the center point gauge to go to the Customize Gauges page.
12. Tap the Location option.
13. Tap the Center Horizontal button.
14. Save the gauge.
15. Go back to the View Dash page.
16. All your dash gauges will be moved and aligned around the center point gauge.

Creating a Multi-Page Dash - Non-Android

You can create a custom dash that contains multiple vertical or horizontal pages. This is actually a scrollable dash that with a Navigation Bar will allow you to page between the pages instead of manually scrolling.

Follow these steps to create your multi-page dash:

1. Go to the Customize Dash page.
2. Clear the dash.
3. Add any or all of your gauges.
4. Go to the View Dash page.
5. Move your gauges to where you want them.
6. You will notice that when you move a gauge off the visible page, the Navigation Bar will show with Next and Prev Page buttons. Note, the Navigation Bar only supports a horizontal (default) or vertical multi-page dash but not both. However, you can still scroll both directions manually.
7. Tap the Next Page button to go to the second page and continue positioning your gauges.
8. Continue this process until you have completely designed your dash.
9. Go back to the Customize Dash page and 'Lock all Gauges'.

Customizing your Dash

Creating a Multi-Page Dash - Android

Creating a multi-page dash for Android requires a different process because you cannot use the Drag & Drop feature if your dash is a scrollable dash. The process is a bit more complicated than a non-Android dash but it is doable. Below are the steps to create a multi-page dash.

1. Go to the Customize Dash page.
2. Clear the dash.
3. Add your second page gauges.
4. Go to the View Dash page.
5. Drag your gauges over to the second page. Note, you will not be able to drag the gauges completely to the second page.
6. Single tap any open space on your dash. The dash will change to 'Page Scrolling' and the Navigation Bar will show with Next and Prev Page buttons. Note, the Navigation Bar only supports a horizontal (default) or vertical multi-page dash but not both.
7. Tap the Next Page button to go to the second page.
8. Single tap any open space on your dash. The dash will change to 'Drag and Drop'.
9. Position your gauges on your second page.
10. Single tap any open space on your dash. The dash will change to 'Page Scrolling'.
11. Tap the Prev Page button to go back to the first page.
12. Double tap on the dash to go back to the Customize Dash page.
13. Add your first page gauges.
14. Go back to the View Dash page.
15. Position your gauges for the first page.
16. Go back to the Customize Dash page and 'Lock all Gauges'.

To add a gauge to an existing multi-page dash, follow these steps.

1. Go to the Customize Dash page.
2. Add your new gauge.
3. Go to the View Dash page.
4. Follow the same steps as above.

Customizing Gauges

Text Gauges

Text

You can enter your own text for Text gauges. The font size and attributes can be assigned to each text value. Different colors can also be assigned to the text. If you want to have multiple lines enter \n (new line) between the text lines (eg. "First line\nSecond line").

Boxes

Here's how you can create a Box to use in your custom dash:

1. Add a generic Text gauge (Text).
2. Go to Customize Gauges and select the Text gauge.
3. Clear the Text field.
4. The Frame Size 'Width' and 'Height' field will automatically be set for a small box.
5. Set the 'Width' and 'Height' to the size box you want.
6. Set the Borders 'Width' to what you want the box to look like.

Vertical Line

Here's how you create a Vertical line to use in your custom dash:

1. Add a generic Text gauge (Text).
2. Go to Customize Gauges and select the Text gauge.
3. Clear the Text field.
4. A box will be created as described above.
5. Set the Frame Size 'Width' to the vertical line width.
6. Set the Frame Size 'Height' to the vertical line length.
7. Check the Borders 'Top' and uncheck the others.
8. Set the Borders 'Width' to the Frame Size Height (vertical height).

Horizontal Line

Here's how you create a Horizontal line to use in your custom dash:

1. Add a generic Text gauge (Text).
2. Go to Customize Gauges and select the Text gauge.
3. Clear the Text field.
4. A box will be created as described above.
5. Set the Frame Size 'Width' to the horizontal line length.
6. Set the Frame Size 'Height' to the horizontal line width.

7. Check the Borders 'Left' and uncheck the others.
8. Set the Borders 'Width' to the Frame Size Width (vertical height).

Images

You can add images to your custom dash by following these steps:

1. Add a generic Text gauge (Text).
2. Go to Customize Gauges and select the Text gauge.
3. Scroll down and tap Text Images.
4. Browse and select your image file (png or jpg).
5. Choose to use this image as your night image or browse for your night image.
6. If you want to maintain the aspect ratio of your image within the frame size, check the 'Resize to frame aspect ratio' box. The frame size is determined by the Gauge Size 'Percent', or your dash size if the image is a backdrop image.
7. If you want this image to be behind all other gauges, check the 'Show behind all other gauges' box. This will allow you to place other text, graphic, and button gauges on top of this image.
8. If you want this image to be your custom dash backdrop, check the 'Set as backdrop image' box. If the 'Resize to the frame aspect ratio' option is checked, the image will be resized to fit within your dash. If the image is not set to be resized, it will be cropped to fit within your dash.
9. For a non-backdrop image, borders are recommended because the image is not shown while dragging. Borders are automatically set for non-backdrop images.
10. You can resize the image to be the size you want by changing the Gauge Size 'Percent'.
11. A Backdrop image is locked (can't be moved) and is placed behind all other gauges so that the other gauges can be seen and moved within the backdrop image.
12. Non-backdrop images are located in the z-order according to their placement in the Customize Dash 'Add or Remove Text Gauges' list (see Z-Order Explained). You can move the non-backdrop images so that other gauges appear either in front or behind the image. To place a gauge in front of the image (ie. the gauge on top of the image), move the gauge such that it's before the image in the list. If you want the gauge to be behind the image (ie. the image on top of the gauge), move the gauge such that it's after the image in the list. Note that Graphic gauges are always behind Text gauges except for Backdrop and Box gauges.

Times

There are three Time Text gauges - Local, Home, and Dual.

1. Local Time will show you the local time for your current location.

2. Home Time will show your home time based on your Time Zone setting.
3. Dual Time will show the Local Time and when tapped will switch to your Home Time.

You can change to a 24-hour time in the Settings page's Time Zone option.

To remove the AM/PM from your Time gauge, uncheck 'Show Unit of Measure' in the Gauge Customize page.

Navigation Map

You can add a navigation map gauge to your custom dash by following these steps:

1. Add the Navigation Map Text gauge.
2. Resize and position it in your dash.
3. Lock the map gauge. Note, the gauge must be locked before showing a map.
4. The map will be shown using Google's web-based maps.
5. Zoom the map (pinch gesture) to select the zoom level you want. This will be saved.
6. If you have started a trip a Trip icon will be shown for where the Trip starts.
7. Hovering/Tapping the Trip icon will show the start city and state.
8. A Direction icon is shown for the current location and direction.
9. Hovering/Tapping the Direction (current) icon shows the city, suburb, and state.
10. Tapping the Direction (current) icon pauses/resumes the map. This is handy if you want to zoom or move around in the map. Tap again and the Direction (current) icon will start moving.
11. Single Tapping the map will center the map on the current location.
12. Text font size and icon size can be re-sized in Customize Gauges.
13. Double tap the gauge will navigate to the appropriate device's web map. For Apple, this will be Apple maps, and for Microsoft, Bing maps. For Android, this is not available. Note, to navigate to the Customize Gauges page with a double tap, the gauge must be unlocked.
14. If you're using an Apple or Windows device and you want to navigate to Google Maps, go to the Settings page and check the Show Google Maps option.

Status and State

The following Text gauges can be added to your dash for gauge status or gauge state:

Engine Status

Changes color depending on the fault status, green for no faults, yellow for warnings, and red for stop engine. Taping the gauge will navigate to the Faults page if a fault is active, otherwise the Drive page will be shown.

Customizing Gauges

Regen State

Shows whether regeneration is active or not, green for not active, orange for active. Taping the gauge will navigate to the Drive page.

Retarder State

Shows whether the retarder is engaged or not, green for not engaged, orange for engaged. Taping the gauge will navigate to the Drive page.

Brake Pedal

Goes bright red when the brake pedal is pressed.

Cruise Control

Shows whether cruise control is active or not, green when active, opaque when not active.

TPMS Status

Changes color depending on the status of the TPMS, green for good, yellow for warning, and red for danger. Taping the gauge will navigate to the TPMS page.

Button Gauges

Name

You can enter your own name for Button gauges. The font size and attributes can be assigned to each name value. Different colors can also be assigned to the name. If you want to have multiple lines enter \n (new line) between the text lines (eg. "First line\nSecond line"). If you don't want to show the name, just clear out the text value.

The following Button gauges can be added to your dash:

Fuel Fill Up

Tap this button after filling your tank when you are having the App calculate fuel economy.

Trip Reset

Starts a new trip. If a current trip is in progress that trip will be ended.

Dimmer

Dims your dash 15% each time for 5 times then brings it back to full brightness.

Night Mode

Toggles the dash between day and night mode. When you navigate away from your dash, day/night mode is reset.

Customizing Gauges

Back

Navigates to the previous page.

Pages

Allows navigation to the following pages: Home, Trip, Drive, Faults, TPMS.

Reconnect

Reconnects the Adapter (this will also connect the Adapter if you haven't already connected). You can use this if your data stops updating for some reason (see the J1708 Data Bus for a possible reason for data stop updating).

Close App

Closes the App properly (see Close the App section for more details).

Graphic Gauges

Graphic gauges are the most complex of the type of gauges you can have on your dash. You can have Circular, Linear, and Circle gauges. A graphic gauge defaults to a Circular gauge and you can change it to a Linear or Circle gauge in the Customize Gauges page.

Name

You can enter your own name for Graphic gauges. The font size and attributes can be assigned to each name value. Different colors can also be assigned to the name. If you want to have multiple lines enter \n (new line) between the text lines (eg. "First line\nSecond line").

If you want to have a gauge name but don't want to show it on your dash, you can uncheck the Customize Gauges option 'Show Gauge Name'. This allows you to still view the gauge name in the gauge lists of the Customize Gauges and Add/Remove Gauges pages but not show it on your custom dash.

Circular Gauges

Circular gauges are like your round gauges in your car. You can customize the look of the gauge to match your car or anyway you like.

Start and End Points

Sets the Start and End points of the gauge scale. You can choose to not show the start and end points if they happen to not align with the gauge scale and intervals.

Start and End Angles

Sets the Start and End angles of the gauge. This allows you to change the orientation of the gauge. The default is a Start angle of 140 and an End angle of 40.

A half-moon vertical left side gauge starts at 90 and ends at 270 and a right-side gauge starts at 270 and ends at 90.

A half-moon horizontal top-side-up gauge starts at 180 and ends at 0 and an upside-down gauge starts at 0 and ends at 180.

Intervals, Knobs, Needles and More

You change how a Circular gauge looks by setting the gauges intervals (tick marks), needle knob, and the needle itself. For Linear gauges, you can change the bar width, the bar gradient and whether the gauge is horizontal or vertical.

There are quite a few other options you can set to make the gauge look like you want it to. It's best to take the time and experiment with the various options.

Circle Gauge

You can think of a Circle gauge as an "idiot gauge" because it does not show you how close you are to an alert. It only shows the gauge's status color (Good, Warning, Danger). It can however show you the gauge's value and will alert you like all the other graphic gauges.

Here's how you can create a Circle gauge to use in your custom dash:

1. Add one of the Graphic gauges.
2. Go to Customize Gauges and select the Graphic gauge.
3. Check the Circle Gauge option.
4. The gauge will become a circle that is filled with the appropriate range color (green, yellow, red).
5. Go to Gauge Colors.
6. Change the Day/Night 'Gauge Value' color to a contrasting Good/Warning/Danger Range color (eg. 'Lime' Day color and 'Turquoise' Night color).
7. Update the gauge colors and go back to the Customize Gauges page.
8. Customize the gauge to what and how you want it to show.

Linear Gauges

Linear gauges are gauges that use a bar to show the gauge value and ranges. Check the 'Linear Gauge' option to change a Circular gauge to a Linear gauge.

Start and End Points

Sets the Start and End points of the gauge scale. You can choose to not show the start and end points if they happen to not align with the gauge scale and intervals.

Customizing Gauges

Intervals, Bar Width, Gradients, and More

You change how a Linear gauge looks by setting the gauges bar width, the bar gradient and whether the gauge is horizontal or vertical.

There are quite a few other options you can set to make the gauge look like you want it to. It's best to take the time and experiment with the various options.

To test your alerts and see and hear them, use the Alerts button in the Customize Gauges page.

Counter Gauges

There are two Counter Text and Graphic gauges - Miles and Hours. These gauges allow you to set certain miles or hours as a reminder to perform some type of vehicle maintenance, eg. Oil Change, Tire Rotation etc. You can create either a Text gauge and/or a Graphic gauge. For Graphic gauges, it is recommended you use a Linear gauge for better visibility. Like all gauges, you can have as many Counter gauges as you need.

After creating a Counter gauge, you should change the gauge's 'Name' in the Customize Gauges page to reflect the reason for the gauge (eg. Oil Change). This allows you to have multiple gauges (eg. Tire Rotation). Then set the 'End Value' to a value where you want to be reminded. Optionally you can set the 'Interval' for Graphic gauges. Then set the 'Warning High Alert' and/or the 'Danger High Alert' values to remind you to act on the purpose of the gauge. You could on the other hand set the 'End Value' to a value that is beyond your reminder and then set the Warning or Danger Alert values to the reminder value.

You also have the Customize Gauges option to change the Counter gauge to a 'Count Down' gauge. Here you need to set the 'End Value' to the starting value for the countdown and the 'Start Value' to where you want the countdown to end.

After you have performed your reminded maintenance, you can reset the Counter gauge by tapping on it. For a non-countdown gauge the value will be reset to the 'Start Value' (normally 0). For a 'Count Down' gauge, the value will be reset to the 'End Value'. If you're in the middle of a maintenance cycle, you can enter the remainder time as the 'End Value' ('Start Value' for Count Down gauge), then change the value to the full cycle time after your first maintenance.

Note, if you accidently reset the counter and want to set it back to its previous value you can set the 'Start Value' (or 'End Value) to the previous value, reset the counter, then change the 'Start Value' (or 'End Value') back to their normal values.

Customizing Gauges

Frames and Spacings

All the gauges can have a frame around them with optional borders (default). The frame can be auto sized or manually sized. The Customize Gauges page's 'Frame Size' option allows for both auto sizing with the 'Auto Size' button, or manually sized with the 'Width' and 'Height' options. Auto sizing will automatically add borders to the frame as tight as possible around the gauge.

When a gauge is auto-sized the Auto Size button will change to 'Clear' which allows you to clear the auto size and set the Frame Width, Height and Spacings to 0.

The 'Frame Spacing' option allows you to add Left, Right, Top, and Bottom spacings. This will adjust the space around the gauge. You can enter both positive and negative spacings.

The 'Text Spacing' option for adjusting the position of the gauge Text, Name and Value. This will adjust the text within the frame. You can add Left, Right, Top, Bottom and Middle spacings. You can enter both positive and negative spacings. Note, for Text and Button gauges, Text Spacing does not change the frame. If the text goes beyond the frame you must adjust it with Frame Spacings. For Graphic gauges, Text Spacing will automatically adjust the frame to fit the spacings.

Frames can have their own custom background color. This is set in either the Customize Dash 'Dash Colors' page or the Customize Gauges 'Gauge Colors' page.

You can do a lot with Frame Size, Frame Spacing, and Text Spacing. It is recommended to start with auto-sizing the frame. This allows you to see how much room you have to adjust the content. When you have it the way you like it you can remove the borders if you don't want to see them. It's best to play around to see how spacings affect the position of the gauge and its content within the frame. Alternatively, you can create a Box gauge and place gauges on top of it (z-order) to get a similar look.

Gauge Ranges

For each Graphic and corresponding Text gauge you can set the Good, Warning, and Danger ranges. These relate to the Green, Yellow, and Red colors on the gauge (these colors can be changed). There is one Good range and two Warning and two Danger ranges. The two Warning/Danger ranges allow for ranges before and after the Good range. You can think of these as low and high ranges. The range values are assigned under gauge alerts (see below).

For help in setting the gauge ranges (Good, Warning, Danger) correctly, take a look at the following Graphic gauges for examples:

- Speedometer - shows high ranges after the green range.
- Fuel Level - shows low ranges before the green range.

- Battery Voltage - shows both low and high ranges before and after the green range.

Text gauges that have a corresponding Graphic gauge (e.g. RPM) share their ranges and alerts (warning, danger, etc.). Updating either one will sync with the other.

Gauge Alerts

All Graphic and corresponding Text gauges except for the Compass gauge have the ability to show, play or speak an alert. Corresponding Text gauges, Counter gauges, the 'Engine Status', 'Regen Status, 'Tire Pressure', and 'Adapter Buffer' gauges also can show and play an alert. Alerts can be individually assigned to the Warning and Danger ranges (Low and High).

Note, gauge alerts will only be shown on your custom dash if the gauge is locked. You must lock the gauge to show the alert. But from the Customize Gauges page, you can show and play the alerts with the Alerts button even if the gauge is unlocked.

You can assign default alert options to all gauges from the Customize Dash option 'Range Alerts'. The 'Range Alerts' default to the App Settings 'Audio Alerts'.

There are numerous options associated with gauge alerts as listed below:

- Warning and Danger Alerts (Low and High)
    - Range Value - the value of the range. This defines the green, yellow, and red ranges on the gauge. Low ranges are to the left of the good (green) range and High ranges are to the right of the good range. This only applies to Graphic and associated Text gauges.
    - Show Alert - displays the following options and shows the alert in your custom dash.
    - Warm Up - the time (in seconds) that it takes for the engine to warm up. This is used to delay the alert until the engine has warmed up.
    - Alert Count - the number of times to play the audio alert when an alert occurs and the App is in the foreground. If the App is in the background (not visible), the audio alert will sound continuously until the App is displayed.
    - Alert Timeout - the time in seconds that the alerts will be shown before automatically dismissed. This is handy if you can't reach the mobile device easily to dismiss the alert yourself.
    - Audio File - the audio file to play when an alert occurs. You need to browse to locate the file and automatically save it. Removing this will just speak the text (if there is any TTS Text).

  - Audio Volume - the volume for playing the audio file. For Windows the volume is relative to the system volume. For example, if the system volume is 50% and you set a volume of 50%, your actual volume will be 25% of the computer's highest volume level.
  - TTS Text - the text to speak when an alert occurs. You can enter "@Gauge" to speak the name of the gauge (either your name or the App's name). Leaving this blank will just play the audio file (if an audio file is set).
  - TTS Pitch - the pitch of the spoken text.
  - TTS Volume - the volume of the spoken text. This is independent of the audio volume.
  - Browse - opens the device's file manager for you to select the Audio File.
  - Play/Stop - plays and stops playback of the Audio File and the TTS Text.
  - Reset - resets the alert options to default settings. For Gauge Alerts, the default is the Dash Range Alerts. For Dash Range Alerts, the default is the System Audio Alerts.
  - Clear - resets the Gauge Alerts to the System Alerts.
- Show Gauge Only on Alerts - shows the gauge on your custom dash only when an alert occurs or the gauge has entered into the Warning or Danger ranges.
- Show Only Driving Alerts - shows the alerts on your custom dash only while driving (vehicle in motion).
- Show Alert Background Color - shows the Text gauge's background color using the alert color instead of showing the gauge's value with the alert color.

If you have simultaneous multiple alerts, they will show stacked on top of each other. Alerts will also be shown as a device notification.

If there is no Audio File set and no TTS Text entered, the alert will only be shown.

Gauge Templates

You can also wrap them in a box and adjust the position and alignment. Use Gauge Templates to clone new gauges (Text and Graphic) and make them look the Use Gauge Templates to clone new gauges (Text and Graphic) and make them look the same. You define Gauge Templates in Customize Gauges and then specify in Customize Dash that you want to use the template for your new gauges. This can be very handy for creating a grid (rows and columns) of text gauges or a group of half-moon circular gauges. Combine this with the 'Snap to Grid' and 'Size to Grid' options

and you can easily and quickly create your custom dash. Here is a possible scenario for creating a grid of text gauges:

1. Go to the Customize Dash page.
2. Clear the dash.
3. Set your 'Snap to Grid Widths' to 80/40.
4. Add your first text gauge.
5. Go to the Customize Gauges page.
6. Select the text gauge.
7. Set (or leave alone) the following:
    - Template Gauge
    - Custom Colors
    - Snap to Grid
    - Size to Grid
    - Group Number (leave 0)
    - Gauge Size
    - Frame Size
    - Show Unit of Measure
    - Font Attributes
    - Font Sizes
    - Spacings
    - Text Alignment
    - Borders
    - Optionally you can set all the Alert options
8. Save the gauge.
9. Go back to the Customize Dash page.
10. Show the Dash.
11. Drag and drop the gauge and verify that the Snap and Size to Grid is placing the gauge like you want it. If not, go back and change the 'Snap to Grid Widths'. Note, if you change the 'Snap to Grid Widths', you must go to Customize Gauges and set the Frame Size 'Width' and 'Height' of your template gauge to 0 in order to snap and size to the new widths.
12. Once you have the correct 'Snap to Grid Widths', add your other text gauges and move them to where you want them in your dash.
13. Group your dash grid so all the gauges can be moved together.
14. Optionally save your dash grid as a sub-dash (see above). Don't forget to add your group number to the notes section so you don't accidentally re-use the group number somewhere else.

Customizing Buttons and Gauge Icons

You can customize your button and gauges icons with your own image files. This allows you to change the style and color of the icons to match your custom dash in day and night mode.

There are 17 icon gauges, 12 button and cruise icons, and 5 alert icons. The button and cruise icons have a day image and a night image. The alert icons have a day and night image for each alert type (NA, Good, Warning, Danger). The default dash icons can be download from this link.

The 12 button and cruise icons and their system names are:

1. Back - back.png
2. Home Page - home.png
3. Trip Page - trip.png
4. Drive Page - drive.png
5. Faults Page - faults.png
6. TPMS Page - tpms.png
7. Fuel Fill Up - fuel.png
8. Dimmer - dimmer.png
9. Reconnect - reconnect.png
10. Close App - close.png
11. Night Mode - night_mode.png
12. Cruise Control - cruise_day.png and cruise_night.png

The 5 alert icons and their system names are:

1. Engine Status -
    a. engine_na.png
    b. engine_good.png
    c. engine_warning.png
    d. engine_danger.png
2. Regen State -
    a. regen_na.png
    b. regen_active.png
    c. regen_inactive.png
3. Retarder State -
    a. retarder_ na.png
    b. retarder_engaged.png
    c. retarder_disengaged.png

4. Brake Light -
    a. brake_light_on.png
    b. brake_light_off.png
5. Tire Pressure -
    a. tires_ na.png
    b. tires_good.png
    c. tires_warning.png
    d. tires_danger.png

When adding your custom icon, here are a few things to consider:

1. System day icons can only be changed, they cannot be removed. Removing a custom day icon will revert it back to the system icon.
2. Night icons can be removed. An icon without a night image will default to the day image.
3. The day and night image names cannot be the same. If you want them to be the same, remove the night image.
4. Your image name cannot be the same as an icon system name (see above).

When adding custom images to alert icons, a prompt will be shown for each alert type (NA, Good, Warning, Danger). You can add your custom image to one or more of the alert types. Canceling the prompt will either allow you to remove your image or skip to the next one.

A recommended free image editor for Windows is Paint.Net and can be downloaded from the following link - https://www.getpaint.net/download.html

Managing your Dash

Auto Save

Auto Save is a feature you can turn on and off on the Customize Dash page with the 'Auto Save the Dash' option.

Auto Save will save your dash whenever you navigate away from the View Dash, Customize Dash, or Customize Gauges pages and the dash was changed. The saved dash name will be 'Auto Saved Portrait' or 'Auto Saved Landscape' depending on the orientation of your device.

To cancel any changes made in those pages and restore your dash follow these steps:

1. Quit and restart the App (don't navigate away from the page).
2. Go to the Customize Dash page (via Settings/Custom Dash)
3. Load the AutoSave dash.

Load, Merge, Delete Dashes

A dash that you have saved or the Auto Saved dash can be reloaded with the Customize Dash page 'Load' option. Note that the Load option will replace your current dash so if you want to keep that dash you should save it first.

Within the Customize Dash Load page are also the options to Merge or Delete a dash.

Merging a dash is handy if you want to incorporate other person's gauges into your dash.

If you no longer want a dash or need to clean up your device's storage, you can delete a dash. Note, this is a permanent delete so if you may want to get it back, it's best to share it with yourself first.

Sharing your Dash

There are two ways you can share your custom dash. You can share it just with a friend or you can share it with everyone. In both cases, you must save your dash first. It is highly recommended that when you save your dash that you provide a good explanation of the dash in the notes section. This allows others to better understand your custom dash when you share it. If you use group numbers in your custom dash, make sure you state in the notes what the group numbers are assigned to.

Managing your Dash

Sharing your Dash with a Friend

You share your dash with a friend by using the Customize Dash page 'Share Custom Dash' option. This option will email your friend your dash. If you have images in your dash, the email will attach up to five of those images.

Note, you can also make an external backup copy of your dash by sharing it with yourself.

Receiving a Dash from a Friend

To receive a dash from a friend, you use the Customize Dash page 'Import Custom Dash' option. But first, you must copy the dash you received from your friend's email to either a folder on your device or to iCloud for Apple devices. You'll need to copy any images also. Importing the dash will allow you to browse for your friend's dash you just copied and then import it as your current dash. If you select an image file for importing, that image will be included in your dash.

Note, for Amazon Fire tablets, the Import function will show the default Amazon File Manager. To see all the files you need to tap the 'Settings ellipse in upper right and then tap 'Show SD Card'. Then you'll see 'Internal storage' in the left-hand list. Tap on that and you'll see all the folders and files.

Sharing your Dash with Everyone

You can share your custom dash with everyone by using the Customize Dash page 'Upload Custom Dash' option. This option will save your dash first then take a screenshot of it. Note that the screenshot will include all your gauges, even the ones that you have set to show only while driving or when alerted. If you have any of those type of gauges you should note them in the dash notes so others will better understand your dash.

Your uploaded dash will be stored in the BlueFire Dash Repository and be made available to everyone. Any Text gauge images will also be stored. You will be credited as the author of your dash by your email address so others can contact you about your dash.

Note, your dash is first reviewed by BlueFire Support before being stored in the Dash Repository. If your dash is accepted, you will be notified by email. The review process can take a few days.

Downloading a Shared Dash

Rather than creating a custom dash from scratch, you can download one that is already built. Use the Customize Dash page 'Download Custom Dash' option to view all the shared dashes in the BlueFire Dash Repository for the current orientation of your device. The 'Download Custom Dash' page downloads dashes 10 at a time and you can navigate using the 'Next' and Prev' buttons. You can change the download dash count with the Settings/System/Dash Download Count option.

Managing your Dash

Each dash is shown with the dash name, the author's email address, the device the dash was created for, and any notes associated with the dash.

Once you find a dash you like, you can select the dash by tapping on it and it will be downloaded and installed as your current dash. You don't necessarily need to download a dash that was built for your mobile device. Using the 'Auto Resize' option (see below) you can resize the dash to fit your device. Just make sure you check the 'Auto Resize' option before you show the downloaded dash for the first time.

Auto Resize

Auto Resize is an option of the Customize Dash page. It can be used whenever you Download or Import a custom dash. If you're planning on resizing a dash, it's probably a good idea to save it first so you can reload it if the resizing isn't satisfactory.

Note, Auto Resize only works right after you Download or Import a dash and before you Show the dash for the first time.

Auto Resize compares the width and height of the dash's host screen with yours and adjusts the gauges accordingly. If the dash was designed for vertical scrolling then Auto Resize will attempt to fit the dash horizontally. Likewise, if the dash was designed for horizontal scrolling then Auto Resize will attempt to fit the dash vertically. If no scrolling is set then Auto Resize will attempt to fit the dash as best as possible.

This is not a perfect science and you may want to try auto resizing and if it doesn't fit your screen very well, you can try reloading the dash again, turn off Auto Resize and resize the dash yourself.

Fuel and DEF

In the App's Setting page, there is an option to show the 'Fuel and DEF' page. From this page you can update the following:

Fuel and DEF Options

Fuel Tank Types

Select the type of fuel tank(s) you have - Single, Dual, or Different.

Primary Fuel Capacity

Enter the fuel capacity (in gallons or liters) of your primary fuel tank.

Secondary Fuel Capacity

Enter the fuel capacity (in gallons or liters) of your secondary fuel tank.
Note, this will only be shown if the Fuel Tank Type is Different.

DEF Tank Capacity

Enter the fuel capacity (in gallons or liters) of your DEF tank.
Note, this will only be shown if the App Setting 'Ignore Aftertreatment' is not checked.

Uses Gaseous Fuel

Select this if your vehicle uses a gaseous fuel like CNG.

Show Fuel Level Volume

Fuel Level can be shown either as a percent of the fuel tank(s) or as volume in the tanks (gallons or liters). The default is percent. If you change this to show volume, your fuel level gauge's 'End Value' and 'Range Alert Values' will be adjusted to reflect the tank's capacity instead of percent. It's probably a good idea though to double check these gauges to ensure they are set the way you want them to be.

Calculate DEF Used

DEF Used can be retrieved either directly from the ECM or calculated by the App using the ECM DEF Tank Level and the DEF Tank Capacity. Along with calculating DEF Used, DEF Fuel Economy will also be calculated. To calculate DEF Fuel Economy, the App needs the odometer from the ECM.

The initial calculated DEF Used requires the DEF Tank Level to change before any DEF Used will be shown. Also, DEF Fuel Economy will take some driving time to become accurate.

Fuel and DEF

The calculated DEF Used and Fuel Economy will be saved when you close the App and shown when you start the App. If you filled the DEF tank and drove without the App calculating DEF Used to a state where the DEF Level was below the level last saved, the DEF Used value will not be accurate and you will need to reset the persistent data.

Unchecking and re-checking this option will reset the calculated values (persistent data) to their initialized state.

Calculate Fuel Level

Fuel Level can be retrieved either directly from the ECM or calculated by the App using the ECM Fuel Used value and the calculated Fuel Remaining (see below).

For the App to calculate Fuel Level it must be able to retrieve Fuel Used from the ECM. If the ECM does not transmit Fuel Used, which is fairly rare, the App will alert you and turn off this option. You will then need to rely on your fuel gauge reading from the ECM for Fuel Level.

If the ECM is transmitting Fuel Used but you find that it is not accurate, ie you fill your tank with more fuel than Fuel Used is reporting, you can adjust Fuel Used with a percentage by using the App Setting 'Fuel Used Offsets'.

For the App to calculate Fuel Level you must also tell the App when you have filled your fuel tank(s). This is accomplished either in the Trip page or with the 'Fuel Fill Up' Text Button gauge.

The calculated Fuel Level will be saved when you close the App and shown when you start the App. If you have driven while the App was closed, the Fuel Level will not be accurate until you connect to the Adapter and turn your ignition on (see Persistent Fuel Data below).

Unchecking and re-checking this option will reset the calculated values (persistent data) to their initialized state.

Calculate Fuel Economy

Fuel Economy can be retrieved either directly from the ECM or calculated by the App using Distance (odometer) and Fuel Used.

For the App to calculate Fuel Economy it must be able to retrieve Distance (odometer) and Fuel Used from the ECM. It then divides Distance by Fuel Used to obtain the calculated Fuel Economy.

If the ECM is transmitting Fuel Used but you find that your calculated Fuel Economy is not entirely accurate, you can adjust Fuel Used with a percentage by using the App Setting

'Fuel Used Offsets'.

Drive Fuel Economy is calculated by the App using Distance (odometer) and Total Fuel Used minus Idle Fuel Used (your actual driving fuel used).

Confirm Fuel Fill Up

Show a confirmation message when tapping the 'Fuel Fill Up' button. This will ensure you don't accidentally tap the 'Fuel Fill Up' button by mistake.

Fuel Economy Distance

Set the distance required to travel after a trip has started before showing fuel economy and distance to empty. The default is 5 miles.

Fuel Used Offset

There are two fuel used offsets, a value offset and a percentage offset. If you need to adjust fuel used for any reason, you either can enter a positive or negative value offset or a percentage offset to help obtain a more accurate reading. Note, the fuel used that is adjusted is the ECM's total fuel used for the life of the vehicle. It is used in calculating life-to-date fuel economy.

Fuel and Distance Remaining

In order for the App to calculate Fuel Remaining, the App needs the Fuel Tank Capacity, the ECM Fuel Used value, and an indication of when you last filled your tanks.

To calculate Distance Remaining, the App needs Fuel Remaining and the ECM Average Fuel Economy value.

The App calculates Fuel Remaining by taking your Fuel Tank Capacity and subtracting if from the current ECM Fuel Used minus the Fuel Used from the last time you filled your tank(s) and then adjusts it with any Non-Engine Fuel Used or Partial Fuel Fill Up (from the Trip page).

To inform the App that you have filled your fuel tanks use the 'Fuel Fill Up' button in the Trip page or add a 'Fuel Fill Up' Text Button gauge to your custom dash (see Filling Your Fuel Tanks below).

Filling Your Fuel Tanks

For the Fuel Level, Fuel Remaining, and Distance Remaining gauges, you can either use your fuel gauge reading from the ECM or tell the App when you have filled your tank.

To use the manual fuel fill option you must turn it on in the App Settings 'Fuel and DEF page. You then indicate that you have filled your tanks from the Trip page's 'Fuel Fill Up' button or the 'Fuel Fill Up' Text Button gauge.

Fuel and DEF

You can also adjust your fuel tank level with the Trip page's 'Partial Fuel Fill Up' button and the 'Non-Engine Fuel Used' value.

The Trip page's 'Partial Fuel Fill Up' is how you inform the App that you didn't fill the tanks to 100% capacity. You can enter either a positive or negative number (gallons or liters) to adjust the actual amount of fuel that is in the tanks.

The Non-Engine Fuel Used value is your estimate of fuel used from external sources such as generators that will be considered when calculating Fuel Remaining and Distance Remaining.

Note, to initially set the tank level that is not full, first set the tank full then enter a negative partial fill value to reduce the tank level to what you want.

Persistent Data

The App will save (persist) the following ECM data for use in the App:

- Odometer
- Total Fuel Used
- Average Fuel Economy
- Primary Fuel Level
- Secondary Fuel Level
- DEF Fuel Level
- DEF Fuel Economy

When you are connected to the Adapter and persistent data is being collected, it will be saved when you are showing your custom dash and you stop driving, when you navigate to a new page, or when you properly close the App. See the 'Closing the App' section for proper ways to close the App. If you do not properly close the App, persistent data will not be saved and will be inaccurate.

When you are connected to the Adapter, persistent data will be used to show calculated fuel levels and calculated fuel economy (see the Fuel and DEF sections).

When you are not connected to the Adapter, persistent data will be used to show fuel levels and fuel economy (calculated and actual).

If you travel and/or use fuel in your vehicle when not connected to the Adapter, persistent data will not be accurate.

If persistent data is not accurate, you can clear it from the Settings page's Clear Persistent Data option.

Persistent data will be automatically cleared when you change Fuel Tank Capacities, set the Calculate DEF Used option, the Calculate Fuel Level option, or the Calculate Fuel Economy option from the Fuel and DEF page,

Trips

BlueFire Apps can record your trips, save them, and email them to you in an Excel csv formatted file. You can see a sample of this by starting and ending a demo trip.

When you first open the Trip page, if you have a current trip in progress that trip will be shown, otherwise the new trip page will be shown. A list of all your trips is at the bottom of the page. You can select any trip to see the information on that trip. Tap the 'New Trip' button to start a new trip.

Starting a Trip

Before starting a trip you should enter the following information:

1. Trip Name - The name of your trip. This is also the file name for the Excel csv file. The default is a date-time stamp. Once the trip is started, the name cannot be changed.
2. Notes - Any notes about your trip that you want to save. You can add and change these later.
3. Options:
    - Email when Trip is Ended - Emails your trip to yourself when you end the trip.
    - Delete Trip after Emailing - Deletes the trip after successfully emailing it. You can use this option if you're short on mobile device storage.
    - Ignore Odometer - Ignores retrieving the Odometer from the ECM. This allows you to start a trip if the ECM does not transmit the odometer.
    - Ignore Location - Ignores retrieving locations for Start, Current, and End locations. You can manually enter the Start and End locations yourself.
4. Starting Location - Your trip starting location. Unless you have the 'Ignore Location' option turned on, this will pick up your current location. Note, using GPS location will record the GPS coordinates and allow you to map to those coordinates.

You can manually enter locations even if you have the 'Ignore Location' option turned off. As soon as you start entering a manual location, the 'Ignore Location' option is turned on for that specific location. To turn it back on, clear out the manual location. You can enter only the city and optionally the state. The city and state can be entered in lower case and will be automatically formatted with a comma between the city and state and a two-letter state code changed to all caps.

To start a trip you must either be connected to the Adapter or have Demo mode turned off. If you're not connected to the Adapter you will be prompted to connect. If you are connected to the

Adapter but have the ignition off, you will not see any data and you will be prompted to turn the ignition on. Note that you just need the ignition on, you do not need to have the engine running.

With the Adapter connected and the ignition on, ECM data used for trips will be retrieved. The Odometer reading is required before the trip can be started unless you have the option 'Ignore Odometer' checked. Fuel Used is also required if the 'Fuel & DEF' Setting option 'Calculate Fuel Level' is set (see the Fuel and DEF chapter).

In order to accurately calculate fuel economy, the App waits for a while before showing the value. The default wait time is 5 miles of driving. This can be changed in the 'Fuel Economy Distance' value in the 'Fuel & DEF' Settings page. While the App is waiting, fuel economy and distance to empty will show either 'Calculating' on the Trip page or the ellipse ('…') on your custom dash.

You can cancel a trip up to the point of your vehicle moving. Then you can only end the trip.

Start and End Locations

The Trip page uses your GPS and your Internet connection to determine the Start and End locations. GPS data provides the location (latitude and longitude) and the Internet provides the city and state. Without both GPS data and the Internet, the Start and End locations cannot be determined and the App will alert you. Note, if you do not have a GPS receiver, the location will be retrieved from the Internet and may not be accurate.

While your trip is in progress, your location is monitored for any changes in order to show your current location. If the App cannot determine your location due to lack of GPS or Internet data, your current location will show 'NA'.

If you are having difficulties with your locations using GPS, you can enter them manually. The App will detect this and not try to automatically update the location. You can also turn off GPS data either in Settings or for the individual trip.

Trip Information

The information shown on the Trip page is as follows:

1. Trip Name (title)
2. Trip Notes
3. Trip Start
    - Date and Time
    - Location
    - Odometer

4. Trip End
    - Date and Time
    - Location
    - Odometer
5. Trip Distance
    - Distance
    - Duration
6. Trip Hours
    - Total Hours
    - Idle Hours
7. Trip Fuel Used
    - Total Fuel Used
    - Idle Fuel Used
    - DEF Used
8. Trip Fuel Economy
    - Fuel Economy (includes Idle Fuel Used)
    - Drive Fuel Economy (excludes Idle Fuel Used)
    - Overall Fuel Economy (Lifetime)
    - DEF Economy
9. Current Fuel Remaining
    - Fuel Remaining
    - Distance Remaining
10. Current DEF Remaining
    - DEF Remaining
    - Distance Remaining

Side Trips

After starting a trip, you can go on side trips and record them. Side trips can be started from other side trips. When a side trip is ended, the previous trip continues. Side trips will be recorded and emailed along with all the other trips.

Ending a Trip

You can end the trip at any time, even when you're not connected to the Adapter. But make sure you had shown the trip page while connected to the Adapter at the end of your trip to collect the final trip data. After ending a trip, depending on the Trip options selected, your trip will be saved and emailed to you. After ending the trip, you can still edit Location and Notes.

Trips

Fuel Economy

You can monitor your Trip Fuel Economy and Trip Fuel Used along with Fuel Remaining and Distance Remaining. See the Fuel chapter for more information on these values.

Note, Trip Fuel Economy is a simple average of the last value plus the current value divided by 2. This helps smooth the value when there are fluctuations in the data.

Trip Gauges

You can start a trip from the Trip page and monitor it on your custom dash. The trip Text gauges, Trip Distance, Trip Fuel Used, and Trip Fuel Economy plus Fuel Remaining and Distance Remaining will update on your dash as you drive. The Trip Reset Text Button gauge will end the current trip and start a new trip.

Trip Meter

There is a separate Trip Meter Text gauge that you can add to your dash and it will act similar to a standard automotive trip meter. The gauge initially shows the distance travelled but you can add fuel used, and fuel economy from the Customize Gauges page's 'Show Full Trip Meter' option.

Tap the gauge and the meter will reset to zero. Tap it again before the distance changes and the trip meter will be turned off (NA). You can have multiple trip meters, as many as you like, and label them with a custom name.

Trip Recording

When a trip is ended, the following information is recorded and saved. This information can be emailed to you for record keeping and analysis. The email contains a summary of the trip plus an attached Excel csv formatted file.

1. Trip Name
2. Vehicle Information (VIN)
3. Trip Notes
4. Start Information
    - Date
    - Location (manual or GPS address)
    - Odometer
    - Total Hours
    - Idle Hours
    - Total Fuel Used
    - Idle Fuel Used

    - DEF Fuel Used (if applicable)
5. End Information (same as Start)
6. Trip Summary Information
    - Distance
    - Duration
    - Total Hours
    - Idle Hours
    - Total Fuel Used
    - Idle Fuel Used
    - DEF Used (if applicable)
    - Non-Engine Fuel Used
    - Fuel Economy (from Total Fuel Used)
    - Drive Fuel Economy (excludes Idle Fuel Used)

Faults (Trouble Codes)

The Fault page shows any active fault that the on-board computers (ECMs) broadcast on the vehicle network. By law all emission related faults must be broadcasted and for the most part the ECMs do broadcast most if not all of their faults. There are cases like in automobiles where the ECMs have proprietary faults that only their diagnostic software can read. BlueFire Apps adheres to the SAE J1939 and J1587 (J1708) standards for displaying fault codes and descriptions. Some manufacturers change the descriptions in their own software but they should still relate to the SAE standard.

The Fault page can also display all in-active faults that the ECMs broadcast. These are historical faults that have been corrected. Unfortunately, some manufactures have chosen not to broadcast these faults so in those cases BlueFire Apps cannot display them.

Along with the fault information, Freeze Frame data is also retrieved (J1939 only). This is information that was stored exactly at the time of the fault. This information can help diagnose the cause of the fault but is ECM dependent and may or may not be available.

J1708 Faults

Due to the nature of J1708, the fault codes that are retrieved may be erratic or incorrect. See the 'J1708 Data Retrieval' section for an explanation of J1708 data retrieval.

Reset Faults

Faults can be reset from within the Faults page however it is not as straightforward as you may think. Many faults require a complex process to reset. BlueFire Apps sends the appropriate reset command to the ECM but you still have to follow the correct procedure to completely reset the fault. That procedure would normally be documented in the manufacturer's repair manual. There is also the possibility that the ECM will ignore the fault reset command and only allow the fault to be reset from the OEM diagnostic software.

You also have the capability of clearing in-active faults. BlueFire Apps will send the appropriate command to the ECM but in many cases the ECM will ignore this command. This is because the manufacturer needs this information for warranty and other reasons and has blocked it and only is allowed in their software.

Monitoring Faults

You can tell BlueFire Apps to constantly monitor for faults and show the fault page when a fault occurs. You can also have BlueFire Apps email you the fault when it occurs. This is handy for

intermittent faults that go on and off and are difficult to catch. See the App Settings for how to turn these features on.

Monitoring J1939 faults can be expensive in terms of the number of data packets required and may cause some data not to be retrieved (see the 'CAN Filter is Full Alert' section). If you just want to monitor faults in your custom dash, it is recommended to not turn on fault monitoring in App Settings and to use the 'Engine Status' gauge instead.

Monitoring faults in general places an additional burden on the Adapter as it has to constantly be looking for faults even though there are none. If you are having Adapter connection issues or issues with retrieving data, you might want to stop monitoring faults and see if conditions improve.

Note, if you're not connected to the Adapter and you're in Demo Mode then you will receive emails for the demo fault codes. This is to demonstrate what fault code emails look like.

Data Logging

BlueFire Apps can record data from the ECMs, save the data, and email it to you in an Excel csv formatted file. You can see a sample of this by starting and stopping logging while in Demo mode.

There are many use cases for data logging. You may want to do some fuel economy analysis. With logging GPS coordinates you could perform some sophisticated spreadsheet analysis on your fuel economy going over a mountain range. Or you may want to just see the difference between having cruise control on and off.

Another use case would be troubleshooting an intermittent problem. You could log the data that you think may be contributing to the problem, wait for the issue to occur, then stop logging. The log file could then show you a trend in the data that may be the culprit.

Important Note - If you are going to be logging ECM data, it is highly recommended that you turn off Demo mode in the App's Settings page. This will keep Demo data out of the log file if you disconnect the Adapter before stopping logging.

Before starting to log data you must enter a File Name, Interval, and at least one Data Option. If you leave the File Name blank, a default date-time stamp name will be created. And if you are in Demo mode, the word 'Demo' will be prefixed to the File Name.

You can include your vehicle's Info (make, model, serial number) with the exported spreadsheet but this is mostly used by those who are logging multiple vehicles and need to differentiate the log files.

Email Options allow you to select how you want the App to automatically email the log file to you. Your choices are by time interval (minutes) or when you stop logging. You can also have the App delete the log file after emailing.

Time Options include UTC, Local, and Home time. UTC time is handy if you're logging data while travelling across time zones.

Data Options are numerous and include most data values that can help with your data analysis. You can select as many as needed but be aware of the CAN Filter restriction and the load you may be putting on the Adapter.

To start logging, tap the 'Start Logging' button. You will need to be connected to the Adapter to receive actual ECM data values. You do not need to stay on the Logging page to continue logging as the App will keep logging data no matter what page you are on. Bear in mind again of the CAN Filter restriction as you navigate to other data pages (eg. Drive, Repair, Dash).

Data Logging

Logging will be paused when the ignition key is turned off and will resume when the key is turned back on. Logging will also be paused if you disconnect the Adapter and will resume when you re-connect.

You stop logging with the 'Stop Logging' button or by exiting the App. Any auto-email options will occur only if you stop logging with the 'Stop Logging' button.

You can see you logging files with the 'Show Log Files' button. A separate page will show a list of your log files and allow you to email or delete them.

The emailed Excel csv file contains a header row with the names of the selected Data Options followed by rows of the data for every time interval. Data that is not available from the ECM will show 'NA'.

Tire Pressure Monitoring (TPMS)

BlueFire Apps supports the PressurePro Pulse TPMS and their LINK modules. It does not support the Pulse FX system. These systems only support the J1939 9-pin BlueFire Adapters. J1708 6-pin Adapters are not supported. You should also ensure that your vehicle supports the J1939 CAN data bus. If your vehicle is 2006 or older, check the diagnostic connector for at least 6 pins. If there are only 4 pins then TPMS is not supported.

Note that a PressurePro LINK module must be configured either by a dealer or with a Pulse unit. If you have a 2020 Tiffin Zephyr or a 2021 or newer Tiffin Motorhome, you may already have a PressurePro LINK module installed.

Installation

To install the PressurePro Pulse, do the following:

1. Purchase the following:
    - A PressurePro Pulse (not the Pulse FX) from a PressurePro dealer. See our website/store for dealers.
    - A Pulse 9-Pin Cable from our website/store.
    - A J1939 Y-Cable. See our website/store for links.
2. Note your diagnostic port connector's color. It should be black or green and is normally located under the dash on the driver's side.
3. Plug the Pulse power cord into a cigarette lighter and power up your Pulse.
4. Configure the Pulse's CAN Baud Rate (Pulse Baud not Gateway Baud). Set the CAN Baud Rate to 500K if your connector's color is Green, otherwise set it to 250K.
5. Configure the Pulse for your tire configuration. Follow their instructions.
6. Power down your Pulse and unplug the cigarette lighter power cord.
7. Connect the BlueFire Pulse 9-Pin Cable to the Pulse unit (both pins).
8. Connect the BlueFire Pulse 9-Pin Green Connector to the Y-Cable.
9. Connect the BlueFire Adapter to the Y-Cable.
10. Connect the Y-Cable to your vehicle's diagnostic port.
11. Plug the Pulse power cord into a cigarette lighter and power up your Pulse.

Configuring TPMS

To configure TPMS for BlueFire Apps, you must first bring up the TPMS page from the Settings page. The TPMS page will allow you to enable TPMS, select the TPMS vendor (Pressure Pro), and configure your tires. The tire configuration in the TPMS page must match the tire configuration you have in your PressurePro TPMS system.

Tire Pressure Monitoring (TPMS)

Note, when you first enable TPMS, you must restart the App for the TPMS icon to show on the Home page.

Showing TPMS Status

From the Home page, tap the TPMS icon. The TPMS page will be shown with data from your PressurePro TPMS system (or Demo data if you're not connected). If any tire is faulting, that tire will be displayed, otherwise the first tire will show. Navigate between the tires using the 'Next' and 'Prev' buttons.

Adding TPMS Gauges

You add TPMS gauges like you add all other Text gauges. From the Add/Remove Gauges page (from the Customize Dash page), select the 'TPMS Status' text gauge. Tap the 'Add+' button for each tire you want to monitor. Go to the Z-Order page and ensure you have the right number of 'TPMS Status' gauges.

Note, you can have either a single gauge that alerts you to the status of all your tires, or you can have a status gauge for each tire. You can also have a single status gauge for all tires along with a status gauge for each tire. See the 'Configuring TPMS Gauges' below for setting up your status gauges.

If you want to include 'Tire Pressure' and 'Tire Temp' with your status gauges, you can add those gauges here too. Just add the number of occurrences of the 'Tire Pressure' and 'Tire Temp' gauges as you have your 'TPMS Status' gauges.

Configuring TPMS Gauges

From the Customize Gauges page, select a 'TPMS Status' gauge. Enter the 'Text' you want to show on your dash or a descriptive text for reference (uncheck the 'Show Gauge Name' option). Then enter the 'Tire Number' you want to associate with the gauge. Note, entering a tire number of 0 will cause the gauge to show the status of all tires. Complete the gauge configuration with any other custom options you want for that gauge including the gauge Warning and Danger Alert options. Do this for all your 'TPMS Status' gauges.

Configuring Tire Pressure and Temperature

If you've added 'Tire Pressure' and 'Tire Temp' text gauges, you can configure them similarly to how you configure your 'TPMS Status' gauges. Give them a text name to show on your dash or one for reference, then assign the appropriate tire number to them.

Tire Pressure Monitoring (TPMS)

Note, the 'Tire Pressure' and 'Tire Temp' gauges default to tire number 0 so they will show 'NA' when first shown on your dash. After you assign a tire number to them they will show data.

Showing TPMS Gauges

After configuring your 'TPMS Status' gauges and 'Tire Pressure' and 'Tire Temp' gauges, show them on your custom dash and move them to where and how you want to see them. You can place the 'Tire Pressure' and 'Tire Temp' gauges around or inside the associated TPMS Status' gauge. When you are finished, make sure you lock the gauges so single tapping will be enabled.

If you have a single 'TPMS Status' gauge (tire number 0), it will show and alert if any of the tires have faulted. Tapping on that gauge will show the TPMS page with the first faulted tire.

Individual 'TPMS Status' gauges will show the status of the assigned tire and tapping on that gauge will show the TPMS page for that particular tire.

TPMS Demo Data

TPMS Demo data consists of 10 tires in the configuration of 2 front, 4 rear, 2 trailer front, and 2 trailer rear. To see the demo data, you must configure your TPMS to be at least this number of tires. Using Demo data can help understand how TPMS gauges work in your custom dash.

Performance

Vehicle data is transmitted by the vehicle ECMs onto a data bus network and is picked up by the Adapter and sent to the App via Bluetooth. The ECM data is placed onto the data bus as data packets. With J1708, each data item occupies a single packet. With J1939, a packet can contain multiple data items.

These packets are transmitted at various intervals according to the SAE specification for J1939 and J1587 (J1708). The intervals can range from 10 ms (100 times a second) to 1000 ms (every second). The engine ECM for example sends RPM every 50 ms (20 times a second) and Speed every 100 ms (10 times a second).

The Adapter reads in these packets from the ECMs and transmits them via Bluetooth to the App. The Adapter uses an internal storage buffer to save these new incoming packets while it's transmitting previously received packets to the App. This storage buffer has limited space and when it's full, new packets are ignored. So you can see that it's very easy for fast data packets like RPM to fill the buffer and thus slower packets will get ignored and never transmitted to the App. The Performance Settings can be used to adjust the speed of receiving these fast data packets thus allowing the slower packets to get into the buffer and be transmitted to the App.

The Performance settings in the Settings page allows you to specify whether you want to allow medium speed data packets (500 ms) to have a higher priority over fast data packets (50-100 ms), or to allow slow speed data packets (1 second) to have higher priority over fast and medium speed packets. Depending on your setting, the Adapter will allow those medium or slow data packets into its internal storage buffer even when it is full, replacing faster data packets. This ensures the medium or slow packets will get transmitted to the App. You may however notice a slight degradation in the App's update frequency for faster packets.

Now don't get this confused with the setting 'Adapter Minimum Interval'. This setting applies to all data being transmitted by the Adapter but it does not change how the Adapter receives data from the ECMs. This setting can be used for controlling the Adapter Data Buffers but you will not gain the data retrieval of slower ECM data that you get with the Performance intervals.

Performance 1 Settings

The Performance 1 Setting allows you to specify whether you want to allow medium speed data packets (500 ms) to have a higher priority over fast data packets (50-100 ms). You can set the interval to any value between 100 and 5000 ms, the default is 500 ms.

Performance

When you set the Performance 1 interval, it forces the Adapter to receive the data from the ECMs at 500 ms intervals (2 times a second). The lower the setting, the faster the data is received. The higher the setting the more likely the slower data items that the ECM transmits have a chance to be received and transmitted by the Adapter.

Performance 2 Settings

The Performance 2 Setting allows you to specify whether you want to allow slow speed data packets (1 second) to have a higher priority over fast and medium data packets (50-500 ms). You can set the interval to any value between 1000 and 5000 ms, the default is 1000 ms (1 second).

When you set the Performance 2 interval, it slows down both Performance 1 and Performance 2 data to allow slow data to get a chance at getting picked up by the Adapter.

Fast Speed Data Messages

The following data items are fast speed packets and are transmitted by the ECMs between 10 ms interval (100 times a second) and 100 ms interval (10 times a second):

J1939:

- RPM
- Speed
- Distance
- Load
- Torque
- Driver Torque
- Retarder Percent
- Accelerator Position
- Throttle Position
- Brake Switch
- Clutch Switch
- Parking Brake Switch
- Cruise Control
- Exhaust Brake
- Fuel Rate
- Instant Fuel Economy
- Average Fuel Economy
- Transmission Current Gear
- Transmission Selected Gear

J1708

- RPM
- Speed
- Load
- Retarder Percent
- Accelerator Position
- Throttle Position
- Cruise Control
- Fuel Rate
- Instant Fuel Economy
- Brake Application Pressure

Medium Speed Data Messages

The following data items are medium speed packets and are transmitted by the ECMs at 500 ms interval (2 times a second:

J1939:

- Oil Pressure
- Boost Pressure
- Coolant Pressure
- Coolant Level
- Regen Status
- Intake Temp
- Exhaust Temp
- DPF Intake Temp
- DPF Exhaust Temp
- DPF Intake Pressure

J1708:

- Transmission Current Gear
- Transmission Selected Gear

Slow Speed Data Messages

The following data items are slow speed packets and are transmitted by the ECMs at 1000 ms interval (every second):

Performance

J1939:

- Oil Pressure
- Oil Temp
- Coolant Temp
- Retarder Temp
- Transmission Temp
- Ambient Air Temp
- Fuel Used
- Fuel Level
- Fuel Level Tanks (1 & 2)
- Fan State
- Fan Speed
- Battery Voltage
- Barometric Pressure
- Brake Air Pressures
- Brake Application Pressure
- DEF Temp
- DEF Level
- DEF Used
- DEF Concentration

J1708:

- All other data

Optimize J1939 and J1708 Data Retrieval

If you need to retrieve data from both the J1939 data bus and the J1708 data bus, you're putting extra stress on the Adapter, plus you may be receiving twice the number of data packets thus having a greater chance of filling the Adapter Data Buffers. Your data response times may also be slower.

To help alleviate this condition, the 'Optimize Data Retrieval' setting is automatically turned on in the Settings page. This will remove any J1708 data requests where J1939 data is available. However, if you find that the J1708 data is more accurate than the J1939 data, you must turn this option off.

When you show your custom dash, the App will check to see if all J1708 data requests are taken care of with J1939 data and alert you to turn off the 'Connect to a J1708 Data Bus' setting for better performance.

Performance

The CAN Filter is Full Alert

If you get the alert 'The CAN Filter is Full' this most likely means that you have too many gauges defined for your dash and you must remove one or more of them. It could also mean that you have the App Setting ' Show Vehicle Info' and/or ' Monitor Faults ' checked (see below).

Each gauge is associated with a J1939 message (PGN) and a PGN can be associated with several gauges. The J1939 hardware includes a CAN (Controller Area Network) filter that only retrieves the data requested by BlueFire Apps. Being a hardware filter, this reduces the burden on the firmware significantly. However, there is a limit to the number of PGNs it can filter and when it is full, you get this alert. Due to the nature of PGNs, it's not possible to determine which data did not get into the filter.

The maximum PGNs that the CAN filter can hold is 28. For reference, the Drive page consumes 20 PGNs (18 with Transmission data) and the Repair page 18 PGNs. The filter is cleared each time you go to a different page. The App Setting 'Show Vehicle Info' consumes 8 PGNs and 'Monitor Faults' 10 PGNs. Unchecking these settings (if they were checked) may just solve your filter full issue.

The Adapter Data Buffers

In order to process data to and from the Adapter, the App has three data buffers - one for receiving data packets from the Adapter via Bluetooth (Input Packet Buffer), one for handling data messages from the packets to the App (Message Buffer), and one for sending data to the Adapter via Bluetooth (Send Data Buffer). These data buffers allow Bluetooth to send and receive data with minimum interruption and loss of data.

The Adapter Data Buffer is Full Alert

If you get the alert 'Adapter Data Buffer is Full' this means that have filled up either the Input Packet Buffer or the Message Buffer. The buffers will be cleared (and all data lost) and the 'Adapter Minimum Interval' setting will be incremented by 100 ms. This will slow down the input packets from the Adapter hence you may see slower updates to your gauges.

Filling up the Adapter Data Buffers is also affected by the performance of your mobile device. A very fast mobile device will be able to pull and process the data from the buffer faster than a slower mobile device thus allowing for a lower 'Adapter Minimum Interval'.

If you continuously get this alert then there is an issue with the App not being able to process the buffers in a timely manner. You will need to investigate the reason as it could be other Apps running in your mobile device or that your device does not have enough processing power to do the job.

You also have the option to change the size of the Adapter Data Buffers using the System Settings 'Adapter Buffer Sizes' option. The default is 100 and there is no point in changing it if the buffer is not filling up. You can monitor the buffer with the 'Adapter Buffer' gauge (see below). Remember that the more data you have in the buffer the slower your gauges will update.

Adapter Buffer Gauge

You can monitor the Adapter Data Buffers with the 'Adapter Buffer' Text or Graphic gauge. This gauge will show you the percentage of data packets that are in the Input Packet and Message Buffers.

Tapping the gauge will switch between the two buffers. The gauge will show a 'P' for the Input Packet Buffer and a 'M' for the Message Buffer before the percentage.

You can set warning and danger ranges to alert you when a buffer starts to fill up.

Note, if you're going to use the Graphic gauge, it is recommended to set it as a Linear gauge for better visibility.

Advanced Functions

The App has a special function for advanced users who understand the J1939 and J1708 SAE specifications. This is located in the System Settings page (Settings/System/Advanced Functions).

Its primary purpose is to check to see if an ECM is sending data for a particular PGN or PID for possible inclusion into the App. It can also be used to send a PGN or PID to an ECM but you do this at your own risk and BlueFire LLC is not responsible for any damage done to your vehicle as a result of the PGN/PID data sent.

To monitor a PGN or PID follow these steps:

1. Check whether you want to monitor a J1939 PGN or a J1708 PID.
2. Enter the PGN/PID.
3. Specify the Source (optional). This is the SAE standard ECM source code. The default is a global source (255 for J1939 and 0 for J1708).
4. Set the Interval in milliseconds (optional). A value of 0 will return data only when it changes.
5. Skip the Send Data field. This is only used if you're sending data to an ECM.
6. Check 'Request' if this is an 'On-Request' PGN/PID. Most PGN/PIDs do not require this.
7. Check 'Multi-Packet' if the PGN/PID consists of multiple packets. Most do not.
8. Tap 'Monitor PGN/PID'.
9. The PGN/PID will be placed onto the appropriate data bus. If the Source is global, all ECMs will receive it.
10. Data will be returned from the ECMs in the 'Source' and Return Data' fields. If multiple ECMs respond the data will alternate between the ECMs.
11. If no data is returned then no ECMs are responding. If you're unsure whether this is an 'On-Request' PGN/PID you can try setting that and retrying.
12. The 'Return Data' will be in hexadecimal format and be structured according to the SAE specification.

If the data returned is 0xFF then it is not being transmitted by the ECM. Note, you need to know the exact location in the PGN/PID and how many bits the data consumes. In most cases the data is on a byte boundary so looking for 0xFF in that particular byte(s) is good enough. If the data is not on a byte boundary (eg. less than 8 bits), then you need to look for just those bits being all ones which indicates no data. If the data is not 0xFF then it is being transmitted and can become a candidate for addition to the App.

Advanced Functions

The easier way is to start monitoring the PGN/PID and take a screenshot of the returned data and send it to BlueFire Support along with what you're looking for and then it can be determined whether data is being transmitted and if it qualifies as a future enhancement to the App.

Helpful Resources

BlueFire Store: https://bluefire-llc.com/store

BlueFire Forum: https://bluefire-llc.com/forum/boards

RV Forums: Search for BlueFire
https://rvforums.com
http://www.irv2.com/forums

Helpful Forum Thread:
https://www.irv2.com/forums/f103/vmspc-replacement-option-425748.html