FiTech Handheld User Manual

Contents

Introduction and Important Notes

Welcome to the new FiTech Handheld controller! Some cool features are: Touch screen + navigation button pad, large display, brilliant colors, several gigs of datalogging memory, 2 USB C connection options (one on a dongle to avoid connector damage), and a nice soft finish.

The handheld is what is used to make changes to the calibration (settings, parameters, AFR targets, idle speeds, spark tables, shift points, etc.) and for viewing what's going on in your system. It is not required for operation after you've performed the required initial setup and basic tuning. You can disconnect it, and put it in the glove box after things are running well. Don't leave home without it, though - if you find a problem and want to see what's going on – you'll want to have it handy.

Disconnect if Storing Vehicle

It is recommended that the handheld be disconnected if the vehicle is to be parked for more than a few days. There is a small current drain when connected (even with the screen blanked out). Disconnecting the vehicle battery is also an OK way of preventing such drain. All FiTech systems will retain their memory and learning, even with battery or handhelds disconnected, as long as they were allowed proper time to save the settings with the key off and battery connected.

Connecting to *FiTech* System

This is not hard. It's just a cable. Make sure the cable doesn't get pinched and cut anywhere. Make sure there is sufficient grommets and gaseous fume barrier used when passing through firewalls. One side of the cable connects to the wire harness of your **FiTech** system, and the other to the handheld.

Buttons/Navigating

The soft buttons on the right are for navigating menus, changing values, and sending values to the "ECU" (computer, brain, the thing that actually runs the engine and/or transmission). You'll see that there are left, up, right, down, (←↑→↓)and OK buttons.

If you want to use the arrow pad to navigate BACK, just hold the UP (↑)button for 2 seconds.

If you want to scroll down by ones, click DOWN↓), and up is UP (↑).

To adjust calibration values, or to make a value be Large or Show or Hide (from various menus), use the LEFT (←) and RIGHT(→) arrows. On calibration values, holding LEFT (←) or RIGHT(→) will quickly adjust the values. Remember that the just-changed calibration values need to be "sent" to the ECU by clicking OK, or tapping "Send to ECU" on the screen (and receiving the "Sent to ECU Succeed" message – and the Ignition Key must be ON to allow this to occur – otherwise it will not send the changes. Most changes can be done on the fly. All changes are permanent after the key is turned off for about 10 seconds (the ECU goes through an IAC reset, and then does the memory rewrite. Some special modes are not saved – such as TPS Zero mode, and Trans Dyno mode – they always reset to off.

Dashboard (View Live Data)

Dashboard will show a bunch of information about what's happening with the system. You can scroll down it to see all that is going on. You can even record what's happening by simply pressing the OK button, or Log On button. These log files are stored on the handheld, and can be retrieved by taking the handheld to a laptop and following the instructions in the "Retrieve Log Files" section.

LARGE Gauges (View a Mini-Dash Panel)

Large Gauges will allow up to 4 parameters to be viewed in a large font. To select which items are shown, just set the value on the right to be "Large". If you try to select more than 4 items, it won't allow it, so you'll need to set a Large item to "OFF" before you can select a new item to show.

Showing Actual Dial Gauges!

A bonus feature is that if you select 1 or 2 items, a special gauge panel will be displayed with AFR, AFR Target, TPS, MAP, and RPM, plus the 1 or 2 items that were selected.

Making changes (Tuning)

When trying to change parameters on a FiTech system, it's important to be connected to the vehicle with the ignition switch on. It is also important to send (press OK on) each parameter that is changed, individually. This method was chosen to avoid accidental changes made while scrolling menus, and to build the habit to be deliberate with the change.

PRO Tuning

In Display Setup, you can allow access to (by changing the item to “Show”) the PRO Tuning and possibly POWER ADDER and/or N2O Tuning if you have a Power Adder EFI system. These groups allow finer tuning and access to other settings.

Reading and Clearing Faults (Fauld Code menu)

Entering this menu will show any LONG TERM SAVED CONFIRMED FAULTS. This may show faults that have been cured. When fault conditions are first detected (maybe a sensor voltage is out of range), it may take a few moments before it is determined to be a long-term fault. Once detected as a long-term fault, it takes many trips before stored faults are automatically erased from the ECU memory. If you’d like to erase any recorded faults, click “OK” or tap “Clear” from within the Fault Code screen. If the faults show up again, then you’ll know there is something that needs to be addressed. Some faults, such as FAN Relay faults may show up if you haven’t properly set up the system to tell it that you’re not using the ECU to control the electric fans. Some systems will show a coil fault if connected to a CDI box (this is normal, and sorry for the inconvenience).

Writing Calibrations (Write Cal to ECU)

Sometimes, when setting up a FiTech system or when going back to a backup calibration, you'll need to use the "Write Cal to ECU" function. This needs to be done with the ignition switch on, while connected to the system.

If you've written a default calibration to the ECU, you WILL need to do the initial setup again. Key points in initial setup would be Engine size, cam selection, desired warm idle speed, and on some systems – which type of RPM input is being used (Tach or 2-wire).

With LS Systems DO THIS "Write Cal to ECU" FIRST

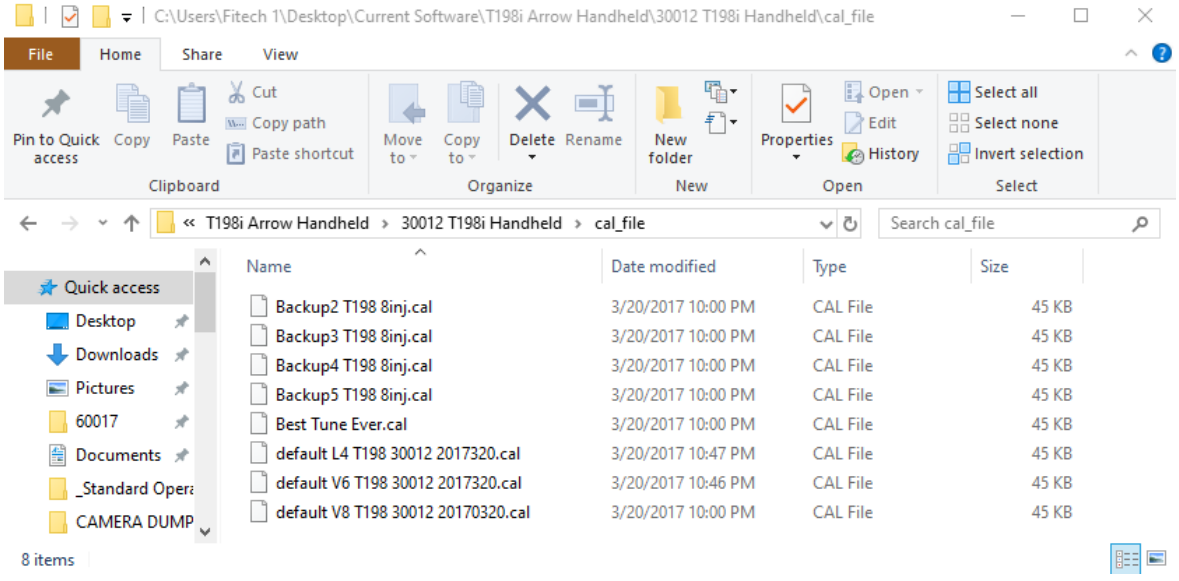
Because of the many calibration differences for 24x and 58x and 4L60e and 4L80e transmissions, use the correct calibration to "Write Cal to ECU" before even attempting to start the engine. You'll regret missing this step if you have a 58x system.

Reading Calibrations (Read Cal from ECU)

When you've made some changes to your calibration, and want to create a backup, it's a good idea to do a "Read Cal from ECU" to save the calibration to your handheld's memory card. It's recommended to do this every few months or after making an improvement that you want to keep.

Renaming Calibration Files on Laptop

The file names can be changed by connecting to a laptop, and manually changing the file name of the backup calibrations. They can also be copy and pasted and renamed (like if you want a special economy shift points tune, or switch between E85 and straight gasoline regularly, you might want separate tunes for things like starting, spark, accel pump, and target AFR). There is almost no limit to the number of calibration files that can be saved in this folder but pay attention to not make the file name too long. Using the word “default” at the beginning of a calibration file will prevent being able to READ cal from ECU to that file anymore, if you want to protect a particular file – but they can still be written.



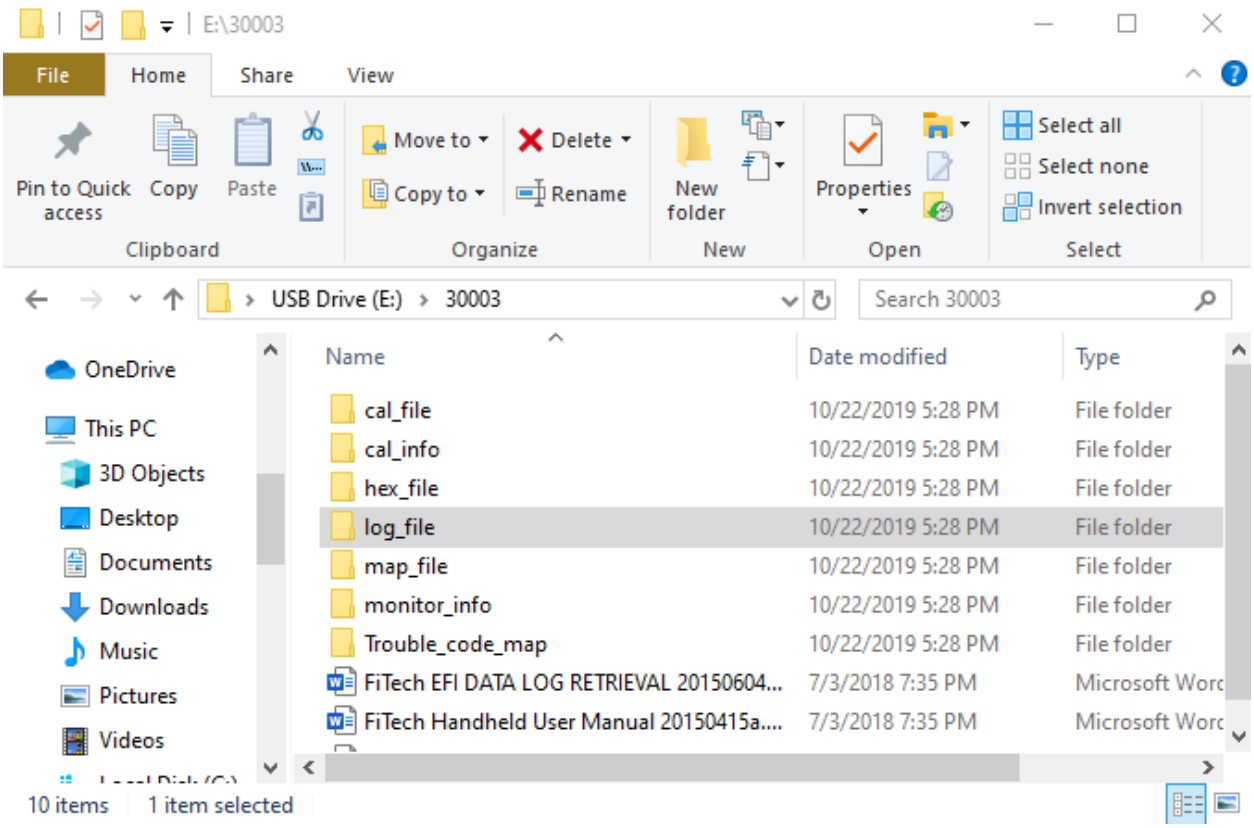
Making Log Files (Dashboard and Data Logging)

In order to record the telemetry data (the numbers that show up when communicating with the ECU) of an open menu such as Dashboard or any group in the Data Logging menu, just press OK or tap “Log On.”

Accessing Log Files (Connecting to a laptop)

Everything in the group will be recorded to a .csv (comma separated values) file that can be viewed in any spreadsheet software, or viewed by the FiTech laptop software. To get the files from the handheld onto a laptop, you’ll need to first connect the handheld to a laptop with the provided USB C type cable, and from the bottom of the handheld menus – “Handheld Software mode Selection” there is “Open USB Mass Storage”, and from there – the folder for the handheld should appear on the screen of the laptop, or be accessible from the File Explorer on your laptop as something like drive D: or higher if you have other drives attached. In the part number folder (for example, 30004), you should be able to find the log_file folder, and in there another folder differentiating which menu the data was recorded from.


Handheld Mode
Open USB Mass Storage
Laptop Software Connection
Main Menu
FiTech
OK


E:\30003
File
Home
Share
View
Pin to Quick access
Copy
Paste
Clipboard
Move to
Copy to
Delete
Rename
Organize
New folder
New
Properties
Open
Select all
Select none
Invert selection
Select
USB Drive (E:) › 30003
Search 30003
OneDrive
This PC
3D Objects
Desktop
Documents
Downloads
Music
Pictures
Videos
Name
Date modified
Type
cal_file 10/22/2019 5:28 PM File folder
cal_info 10/22/2019 5:28 PM File folder
hex_file 10/22/2019 5:28 PM File folder
log_file 10/22/2019 5:28 PM File folder
map_file 10/22/2019 5:28 PM File folder
monitor_info 10/22/2019 5:28 PM File folder
Trouble_code_map 10/22/2019 5:28 PM File folder
FiTech EFI DATA LOG RETRIEVAL 20150604... 7/3/2018 7:35 PM Microsoft Word
FiTech Handheld User Manual 20150415a.... 7/3/2018 7:35 PM Microsoft Word
10 items
1 item selected

Updating Firmware of ECU

In the event that an ECU firmware is released, with either more features or bug fixes, you can use the handheld to update the ECU. There are 2 types of updates:

For Bug Fixes Only

Bug fixes – which will KEEP THE SAME VERSION NUMBER, but UPDATE LETTER Version (such as T198i goes to T198L) – these DO NOT require updating the handheld configuration files, such as those in the "cal_info" "monitor_info" and "cal_file". The calibration files in the ECU can be saved by the "Read Cal from ECU" function to a backup calibration file, and rewritten to the ECU after the firmware update, using the "Write Cal to ECU" function.

For Upgrades

Upgrade versions – these will have a NEW VERSION NUMBER but may have a lower Letter number (i.e. T198i is to be replaced by T199A). These upgrades will require a complete handheld configuration file replacement.

After obtaining the updated software (.hex file is what goes into the engine or transmission controller), and saving it to a known place on your laptop, you'll need to transfer it to the handheld with the supplied USB C cable. The target file location on the handheld will be the "hex_file" folder within the part number folder of your system. Place the "xxxxxx.hex" file into the hex_file folder, and return to the vehicle to program the ECU.

Updating Firmware of Handheld

Sometime in the future, FiTech will release an improved version of handheld software (xxxx.bin file). This file will need to be placed in the handheld's "sys_bin" folder that is inside the "share" folder on the handheld drive (connect handheld to a PC with the USB cable, and select "Handheld Software mode Selection" and "Open USB Mass Storage" to allow the PC/laptop to access the memory card on the handheld). Once the file is on the handheld, reset the handheld by pressing OK, or disconnecting and reconnecting the USB cable, and scroll down to "Display Setup" and make sure "Handheld Software Reboot" is set to "Show". Then back out to the main menu and scroll down to "Handheld Software Reboot" and select it, and choose the new version of .bin file that you placed in the "sys_bin" folder. Confirm with yes that you want to update the software version, and the handheld will go through the reboot procedure. Please make sure to not disconnect the USB power to the handheld or press any buttons during this operation.

Connecting to Laptop Software (for using *FiTech* Laptop Software)

One of the coolest features of the handheld is that it acts as a passthrough for connecting the **FiTech** laptop software to the ECU via a USB cable.

Copy and Install Laptop software to your laptop

In order to connect an ECU to a laptop, you'll first need to copy the laptop software (from "FiTech PC Software" folder on handheld) installation to your laptop and run the installer, and install the drivers. These instructions are on the handheld itself, inside the FiTech PC Software folder.

Set Handheld to "Laptop Software Connection"

This connection mode is accessed from the "Handheld Software mode Selection" menu on the bottom of the Main Menu of the handheld. This