MAP-ECU3 Quick-Start Hints

Thank you for purchasing the MAP-ECU3. We believe that you will find it to be the most comprehensive piggy-back ECU available to the aftermarket. In order to fully familiarise yourself with the functions of the MAP-ECU3 please read the accompanying operators manuals in PDF format. The manuals can be found on the MAP-CAL3 CDROM or can be downloaded from our website. If you do not have a PDF reader, refer to www.adobe.com for download instructions.

We also have a comprehensive Frequently Asked Questions (FAQ) section on our website: http://www.mapecu.com >Support>FAQ and our Forum: http://www.mapecu.com/forum/ We recommend you register on our Forum to gain the latest information on wiring diagrams and vehicle specific maps.

We have put together this quick-start guide to help outline the most important functions of the MAP-ECU3 which will get most users up and running quickly. All wiring should be done by those experienced in automotive electrical systems. This quick-start guide assumes the user has sufficient knowledge of automotive mechanical and electrical systems, and is proficient in working with Windows-based computer programs.

1. Disconnect battery negative (-) terminal of vehicle.
2. Determine which type of air metering system your vehicle has and the igniter configuration if using timing control, e.g. distributor, group fire (wasted spark) or individual coils. Note: It is imperative that the correct firing order is known and the harnesses connected accordingly. Refer to the OEM manual or contact a local dealer if you are unsure of the type. There are three main types: KVF (Karman Vortex) which is frequency based, MAF (Mass Air Flow or Hotwire) and Manifold Absolute Pressure (MAP) which are voltage based on a scale of 0-5 volts DC. Most late model fuel injected vehicles are MAF type, but you must be sure in order to correctly wire the MAP-ECU3.
3. Following OEM wiring guidelines, connect the MAP-ECU3 to the vehicle ECM harness. Wiring schematics for most late model vehicles can be found on the MAP-ECU website. **Note**: The harnesses are pin compatible with MAP-ECU2 apart from the Switched Output #3 (Black wire on 18-Way) and RPM Input (White wire on 16-Way). If you do not plan to use these connections, a MAP-ECU2 harnesses can be used for MAP-ECU3. See the MAP-ECU3 manual for the full harness pin out. **Do not connect the MAP-ECU3 directly to Ignition coils. The high voltage associated with Ignition coils will destroy the MAP-ECU3 and void the warranty.**
4. Connect a 1/8” ID vacuum hose from the intake plenum to the MAP-ECU3 taking the most direct route possible. Be sure to connect the vacuum hose to a hose port located on the intake plenum after the throttle body in order for the MAP-ECU3 to correctly read manifold vacuum. You can also tee into another vacuum line if necessary, but be sure it is the correct source. Note: The MAP sensor in MAP-ECU3 is different to the one used in MAP-ECU2 so a smaller diameter vacuum line must be used.
5. Once installation of the MAP-ECU3 is complete and all connections have been checked, install the MAP-CAL3 software located on the supplied CD ROM. After installing the MAP-CAL3 software, open the MAP-CAL3 folder (default is C:\Program

Files\MAP-CAL3\) and run the MAP-CAL3 program (mapcal3.exe). It may be easier to place a link to the program on your desktop for future use.

6. Connect the USB cable to the MAP-ECU3 and to your computer. Install the USB driver as per the instructions on the MAP-CAL3 CDROM.
7. Locate and download the latest MAP-ECU3 table for your specific vehicle from the www.mapecu.com website. Save these tables to the same folder where you previously saved the MAP-CAL3 program. If there is no table for your specific vehicle, you may still be able to use one of the tables for another vehicle in order to get started. Contact your dealer for information. **Note**: MAP-CAL3 will import and convert any MAP-ECU and MAP-ECU2 tables. If you are upgrading from MAP-ECU(2) to MAP-ECU3, save your current table to the MAP-CAL3 folder and import it using MAP-CAL3. Only the Primary Fuel table, up to 8000 rpm and +30psi, and ECU Configuration parameters will be populated from MAP-ECU a table. The remaining zones can be filled using 'copy' and 'paste' functionality. Secondary Fuel, Timing, O2 Adjust and Aux Injector will be defaulted to zero's.
8. In the MAP-CAL3 software open the table that you downloaded for your specific vehicle in step 7 above.
9. Go to FILE/OPEN on the MAP-CAL3 toolbar and select (click on) the table desired. Once the table is open, you will be able to click on the fuel, timing, etc. tabs in order to see the maps.
10. At the bottom right-hand corner of the MAP-CAL3 software you will find the CONNECT button. Click this button to connect to the MAP-ECU3 unit. When prompted to Update ECU Table, press YES to update ECU.
11. The MAP-CAL3 software will now write the table you opened to the MAP-ECU3 unit. You can see the progress at the bottom left-hand side of the screen. When writing is complete you will be connected in real-time to the MAP-ECU3.
12. Turn on vehicle ignition, but do not attempt to start the vehicle. The first function you need to adjust for your specific vehicle (while in real-time) is the TPS (throttle position) indicator on the dashboard tab. When the throttle pedal is at full rest (idle), the indicator line should be resting just above the bottom of the TPS indicator box (0%). If it is not, go to EDIT/ECU CONFIGURATION in the MAP-CAL3 toolbar along the top of the screen. In this box you will see TPS IDLE. Adjust the voltage number in this box and press OK. Hint: When the cursor is in the TPS IDLE box, you can press the letter 's' on your keyboard to 'sample' the current TPS voltage.
13. Once the TPS IDLE has been set depress the throttle pedal fully and notice the indicator line. If the TPS indicator line is above or below the 100% level, adjust the value in TPS MAX using the same method as above. Hint: The 'i' key can be used to sample the 'input' voltage for TPS MAX as well.
14. When the TPS value has been properly set, and is within the range of 0-100%, go to EDIT/ECU CONFIGURATION again and note the settings for Igniter Configuration. Be sure this is correct. Then, note the box at the top of the screen. Be sure it correctly reads KVF (Karman Vortex) or MAF (Mass Air Flow) for the type of air metering system your vehicle uses. If these values are correct, press OK. **Note**: For MAP configurations, use MAF (Mass Air Flow)
15. Once all these values have been adjusted for your specific vehicle you should save the settings. Go to FILE/SAVE DATA FILE, and rename the file for easy recall later. Press OK. **Note**: You can also add a comment in the box provided to be saved along with your file which will allow you to document you modifications in each file.
16. After saving the file the MAP-CAL3 software will automatically disconnect from the MAP-ECU3 and you will be DISCONNECTED. Press the CONNECT button again to connect to the MAP-ECU3 and enter NO to load from ECU when prompted.

17. Start the vehicle and check if the RPM and PSI readings are correct. If these are not correct, make any adjustments before proceeding, e.g. RPM may read incorrectly if your vehicle uses coil packs or coil-in-plug configurations. Determine at this time if the vehicle is ready for further tuning. **Note**: If you are using timing control and the vehicle does not start, check the Igniter Configuration, Igniter Polarity and Igniter Drive jumper settings. If Igniter Configuration is correct, verify the igniter firing order and try Igniter Drive first. If LED #2 is flashing the MAP-ECU3 has detected a mismatch between the Igniter Configuration and the number of active Igniter signals.
18. Once you are ready to begin tuning there are some steps that will make the process much faster and easier. To begin with, monitor all dyno tests and/or road tests while connected to the MAP-ECU3 in real-time or CONNECTED. If necessary, have an assistant monitor the MAP-ECU3 dashboard and graph to determine where changes need to be made. Logging can help when reviewing a dyno run.
19. MAP-ECU3 can be tuned real-time or offline based on the tuners preference. MAP-CAL3 now allows multiple zones in TABLE mode to me modified real-time.
20. It is difficult to real-time tune on a dyno power run therefore real-time tuning is usually used while holding load points.
21. Many tuners choose to use the 3D GRAPH to make any adjustments to the mapping as it allows the tuner to visually determine the changes needed by PSI and RPM. If you choose to utilise the 3D GRAPH for tuning DISCONNECT after a dyno run. Click on 3D GRAPH tab to bring up the graph. In the upper right-hand corner of the MAP-ECU3 software there is a box for ADJUSTMENT PERCENTAGE. Enter a value in this box, for instance, a value of 10 indicates a change of +/-10% for every touch of the PAGE UP(+) or PAGE DOWN(-) keys while in the graph. You can also ADJUST BY CONSTANT for smaller changes to the graph by pressing the button directly below the value box. Now click back anywhere in the graph with your mouse to make graph adjustments. Using the arrow keys on your keyboard position the red cross-hairs at the point on the graph you wish to modify. Then using the PAGE UP(+) or PAGE DOWN(-) keys you can modify the graph by the value you previously entered in the value box. This same method applies to the TABLE if you choose to utilize the TABLE for tuning purposes rather than 3D GRAPH.
22. Keep in mind that KVF (Karman Vortex) vehicles compute airflow by frequency and small changes to the map can have a drastic effect on the air/fuel ratio. MAF and MAP vehicles compute airflow by a linear 0-5 volt signal and react less quickly to changes in voltage. While in MAF and MAP modes the 3D GRAPH represents 0-5 volts DC. While in KVF mode (Karman Vortex) the 3D GRAPH indicates 0-3400 Hertz (Frequency).
23. When all changes have been made, go to FILE/SAVE DATA FILE and click on the file name you have chosen for your program. Click OK to save the changes to your program.
24. Repeating step 10 above, press the CONNECT button to connect to the MAP-ECU3 and indicate YES to update ECU Table.
25. Make another dyno run or road test to determine if the changes made above are sufficient. Repeat step 16 above until tuning is complete.

Disclaimer

Installation and use of this product should only be attempted by trained and experienced automotive specialists who are experienced with automotive electrical, mechanical and electronic fuel management technology. Installation by untrained or inexperienced personnel can result in damage to this product or your vehicle.

When installing this unit, observe the operating procedures of any tools, especially soldering irons. Misuse of these tools can cause serious injury.

Never tune the MAP-ECU3 on public roads, this can be dangerous for you and others.

Never attempt to operate the vehicle and tune the MAP-ECU3 at the same time.

When tuning a vehicle always ensure there is adequate ventilation for exhaust fumes as they are harmful.

Avoid open sparks, flames or operation of electrical devices near flammable materials. Ensure there are no leaks from the vehicle fuel system.

Ensure all electrical wiring is well secured and insulated in accordance with the vehicle manufacturers standards. The MAP-ECU3 is designed for negative earth 12V environments only.

Always use a professional Air/Fuel Ratio meter and preferably a knock monitor when tuning the MAP-ECU3.

Improper tuning of the MAP-ECU3 can result in permanent damage to your engine. Performance Motor Research Limited accepts no responsibility for damage due to improper installation and tuning. Tuning any motor vehicle ECU is a combination of art and science. There are many articles on tuning modern EFI vehicles that should be consulted and there is no substitute for experience. Uttermost care must be exercised when tuning a motor vehicle, especially fuel and timing under heavy load conditions.

Performance Motor Research Limited provides no warranty and accepts no responsibility for damage from using any base tables from other vehicles.

Installation of this unit requires modifications to the vehicle's electrical system. Modifications should only be carried out with the ignition key removed and the negative terminal of the battery disconnected.

Never 'short-out' any connections as this could damage the MAP-ECU3 or your vehicle's electrical system.

Ensure all connectors are inserted fully and the locking clip(s) are engaged.

Only use neoprene rubber vacuum line specified and ensure it is inserted fully over the barbed fitting. Ensure you do not exert too much force and damage the vacuum sensor.

Ensure the vacuum line is free of kinks or any form of damage. Ensure there is no possibility that the vacuum line can be damaged or blocked by the installation. This may cause erratic operation or damage to your vehicle.

Ensure the MAP-ECU3 is installed securely and the wiring is not strained in any way. The MAP-ECU3 is **NOT** designed to be installed in harsh or wet environments, e.g. engine bay, outside the vehicle. The MAP-ECU3 should be installed as close as possible to the OEM ECU provided it is installed in accordance with the previous statement.

Disconnect the PC serial cable when tuning is completed. Do not leave the cable connected to the MAP-ECU3 during normal operation.

The MAP-ECU3 is warranted against manufacturers defects for a period of 3 months from the date of purchase. Performance Motor Research Limited reserves the right to repair any unit under warranty. Damage caused by incorrect installation will not be covered under warranty.