By Digital Inflection Corporation

DUAL-FLASH

GM GENIII

Please read this document in its entirety before installing or operating your DUAL-FLASH unit.

Important Note:

Federal and state emission laws prohibit any person from tampering with parts, components, and systems installed on a vehicle or vehicle engine to control emissions. If you modify your vehicle or engine for use on public streets, you are responsible for ensuring that your modifications and use of any aftermarket parts, including the DUAL-FLASH, do not constitute illegal tampering. You should also check to be sure that your modifications do not cause the vehicle to exceed your local noise ordinances.

Digital Inflection Corporation has made every effort to produce a quality product that will provide you with years of use by building the dual flash with quality components acceptable for use in automotive applications. With that said Digital Inflection Corporation will not be held responsible for any harm or damages caused by DUAL-FALSH or by the instillation of the DUAL-FLASH. It is recommended that someone knowledgeable in elections fabrication and repair install the DUAL-FLASH unit.

To use the DUAL-FLASH you must agree with the notices above. If you do not agree with the above agreement please return the DUAL-FLASH to your local distributer for a full refund.

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What is the OmniTuner DUAL-FLASH?

The OmniTuner DUAL-FLASH is a member of the OmniTuner line of products by Digital Inflection Corporation. This device allows you to install two separate flash chips in one Powertrain Control Module. Most GM Generation III applications are supported but when ordering specify which PCM you have so that the DUAL-FLASH has the proper flash chips installed. GM used both 512k and 1 megabyte flash chips in the GEN III PCMs.

The DUAL-FLASH replaces the flash chip that was installed by the factory with two separate OEM flash chips that individually appear to the PCM as a single flash chip when selected. Through the use of a switch of your choice you have the ability to select which one of these flash chips is used by the PCM. You have the ability to switch between flash chips only when the ignition is in the "off" position to prevent accidently switching between flash chips when the car is running.

Possible applications for the DUAL-FLASH include tuning a vehicle for multiple fuels, assuming this tuning is compliant with emission regulations. You can use ethanol based fuels when available and switch back to conventional fuels when desired. Additionally you might choose to tune one flash chip for fuel economy but leave the other flash chip stock. Any tune that you can flash to a stock PCM can be flashed to either one of the flash chips of a DUAL-FLASH enabled PCM.

NOTE: Insure the DUAL-FLASH has an image that is compatible with your PCM before installation. Unless the DUAL-FLASH image has a compatible PCM operating system you will need to reflash the DUAL-FLASH with the correct image before installation. The DUAL-FLASH comes with a default tune for a GM 12200411 PCM which is compatible with many GM PCMs.

How to operate the DUAL-FLASH

Operating the dual flash is as simple as flipping a switch. While your vehicle's ignition is in the "off" position flip the switch to position one for the first flash or position two for the second flash. You can use a standard toggle switch to keep things simple. You should be aware that changing the position of the switch while your vehicle is running will not switch flash chips but when you turn the ignition "off" and back "on" again the switch between flash chips will occur. So, it is best to only flip the switch when the ignition is off to avoid selecting the wrong flash chip at startup**. It is also important to note that after turning the ignition "off" you must wait 20 seconds before turning it "on" for the DUAL-FLASH to switch.** This is because it takes about 20 seconds to completely power down your PCM.

DUAL-FLASH Installation

The following steps must be performed to install the DUAL-FLASH in a GM generation III PCM.

1. Remove the old flash chip. Be sure to note the orientation of the chip on the board.
2. Install the DUAL-FLASH adaptor in place of the old flash chip.
3. Connect the DUAL-FLASH to a constant 5 volt power source in the PCM.
4. Connect the DUAL-FLASH switch line to an unused output pin of the PCM. You must disconnect this connector from the PCM's board since it is enabled for use in other applications. You must secure this connector with epoxy or other means to insure it cannot move.
5. Run a line from the location of the switch you will use for the DUAL-FLASH to the vehicle's PCM plug. You will need to integrate this line into the plug with the included plug socket.
6. Reflash the DUAL-FLASH in your PCM with a tuning application through your ODBII port. Be sure to disable ON-STAR or take any other precautions recommended by your tuning software. Do not start your vehicle until the PCM has been reflashed.

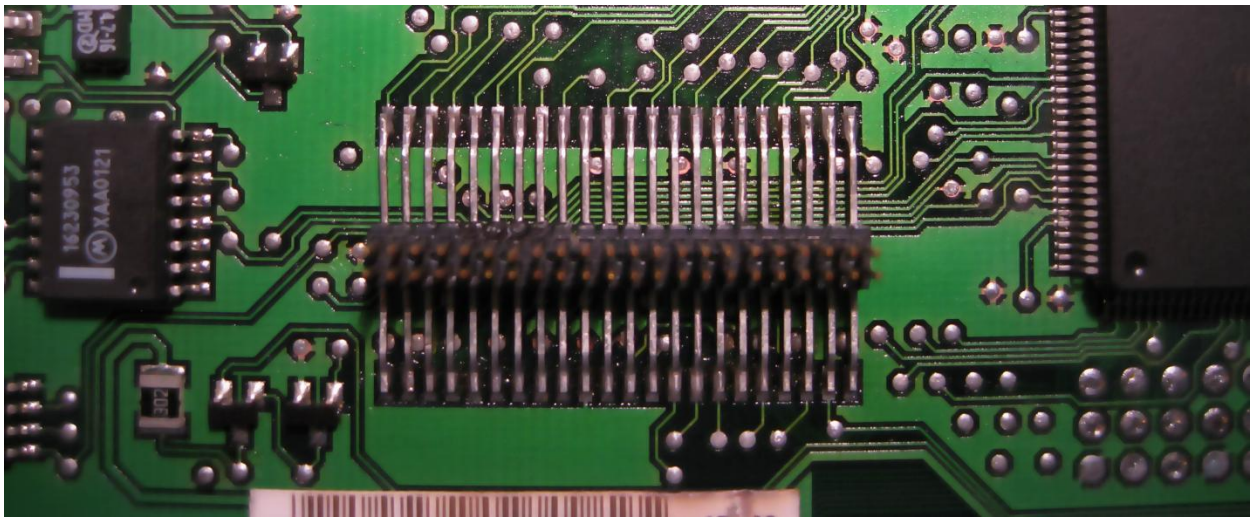
Removing the flash chip can be one of the most challenging aspects of this instillation. You should follow proper grounding procedures for working with electronics. It is recommended that you use a SMD workstation to safely remove the old flash chip. Using a soldering gun is not very easy since all the pins must be hot enough to melt the solder to remove the original chip. It is very important that you do NOT use force when removing the flash chip such as lifting the chip with some pins still soldered. The pads that the chip is mounted to on the PCMs circuit board will break off if you apply to much force or heat, destroying your PCM.

If you use a soldering iron to remove the flash chip, against our recommendations, do not try to save the original flash chip. You can try heating one pin at a time with your soldering iron and then with the iron still on a pin use a small pair of tweezers to lift (bend) one pin off its pad at a time. Once all pins have been removed the chip should come off. Remember not to put any force on the pins that are still soldered.

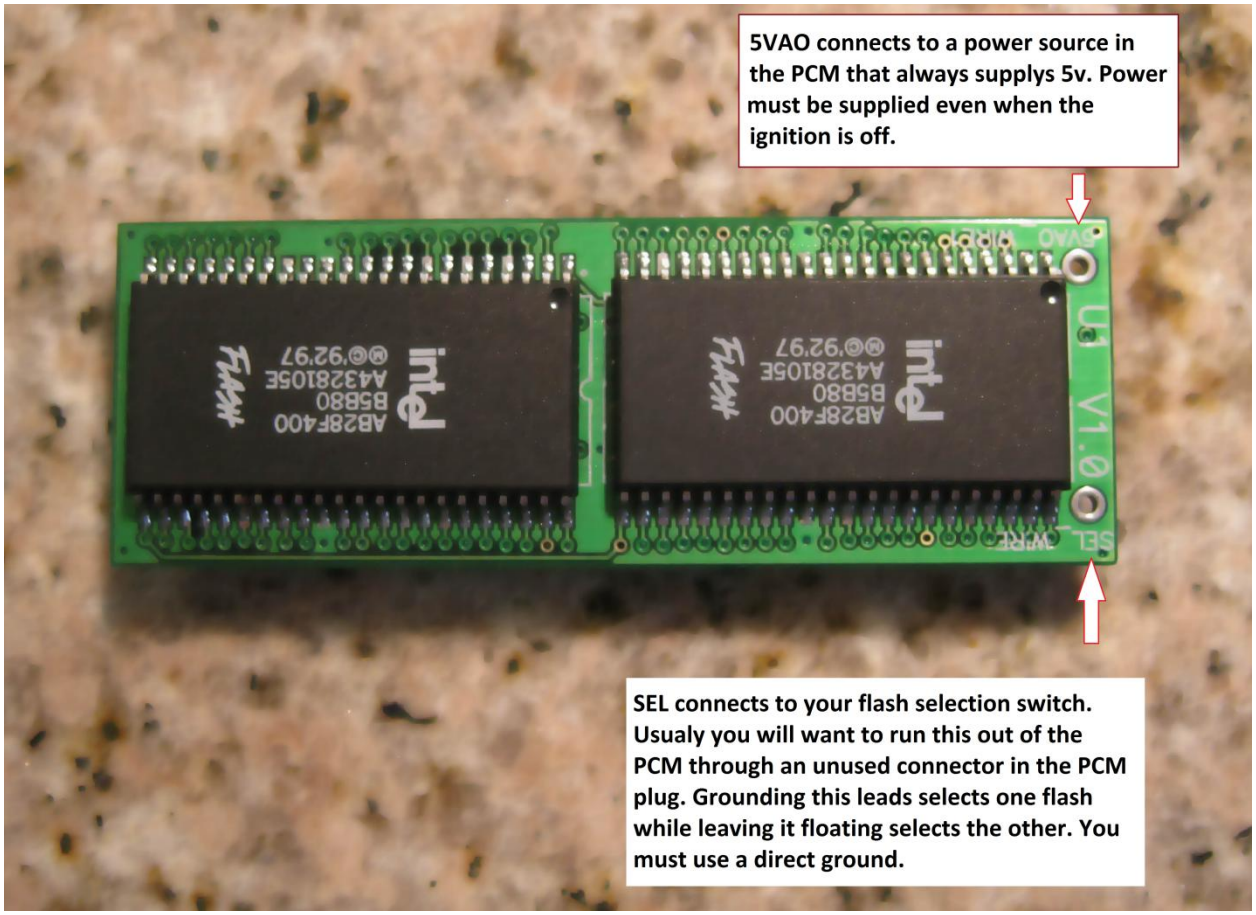
After you have removed the old flash chip put a small amount of flux on the pads that once held the flash chip and reflow the solder on the pads. This will make installing the DUAL-FALSH adaptor much easier. Once this is done, apply solder paste and a little more flux to the pads. You can now set in place the DUAL-FLASH adaptor. Make sure all the pins are lined up with the pads and then solder one pin in the upper left corner and check the alignment again. If the alignment is off melt the solder and align it again until all pins are aligned. Once they are aligned solder the pin in the lower right corner to secure the flash adaptor's alignment. Now you can solder the remaining pins and remove any remaining flux.

NOTE: When soldering sometimes small balls of solder are formed and stick to the circuit board. Make sure all of the solder balls are removed from the board or they can break loose during operation and short out chips in the PCM. Use some type of anti-static dust spray and alcohol wipes to insure all remaining bits of loose solder are removed.

When you finish installing the DUAL-FLASH adaptor it should appear similar to the image below.

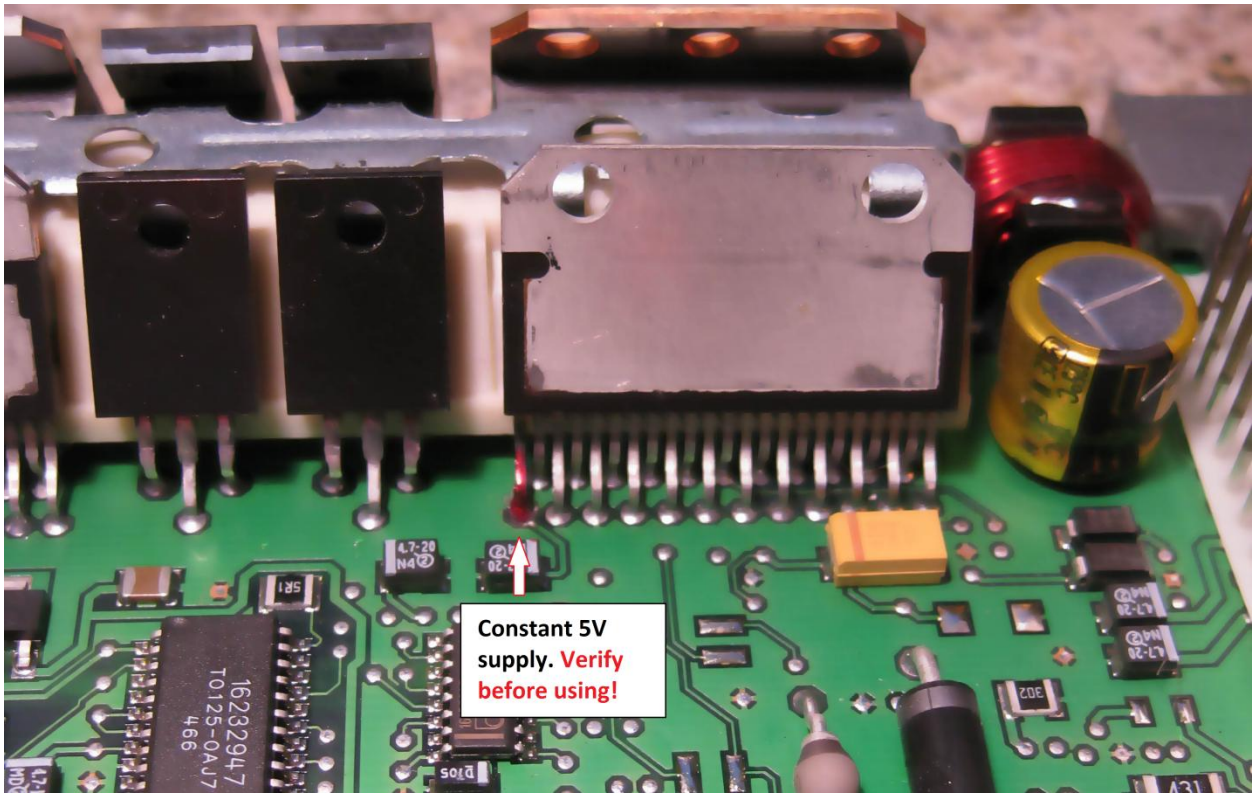


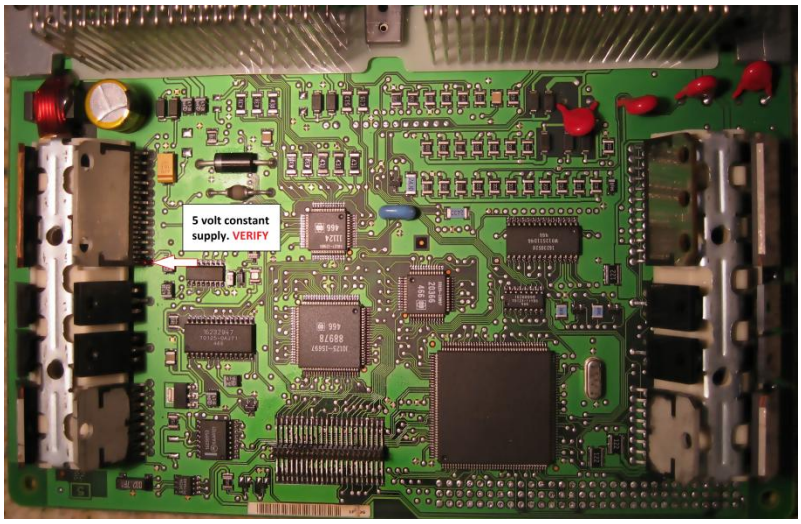
Now that you have installed the DUAL-FLASH adaptor you are ready to connect the power and switch wires to the DUAL-FLASH. Review the image of the DUAL-FLASH below to familiarize yourself with the connections.



Use high gage (thin) STRANDED wire when connecting the power and switch lines to the DUAL-FLASH. 24 gage stranded wire is recommended but the gage is not important. It is important to use stranded wire so that vibrations will not fatigue the wire over time. It is also wise to secure the wire with a dab of GE clear silicone to hold it in place.

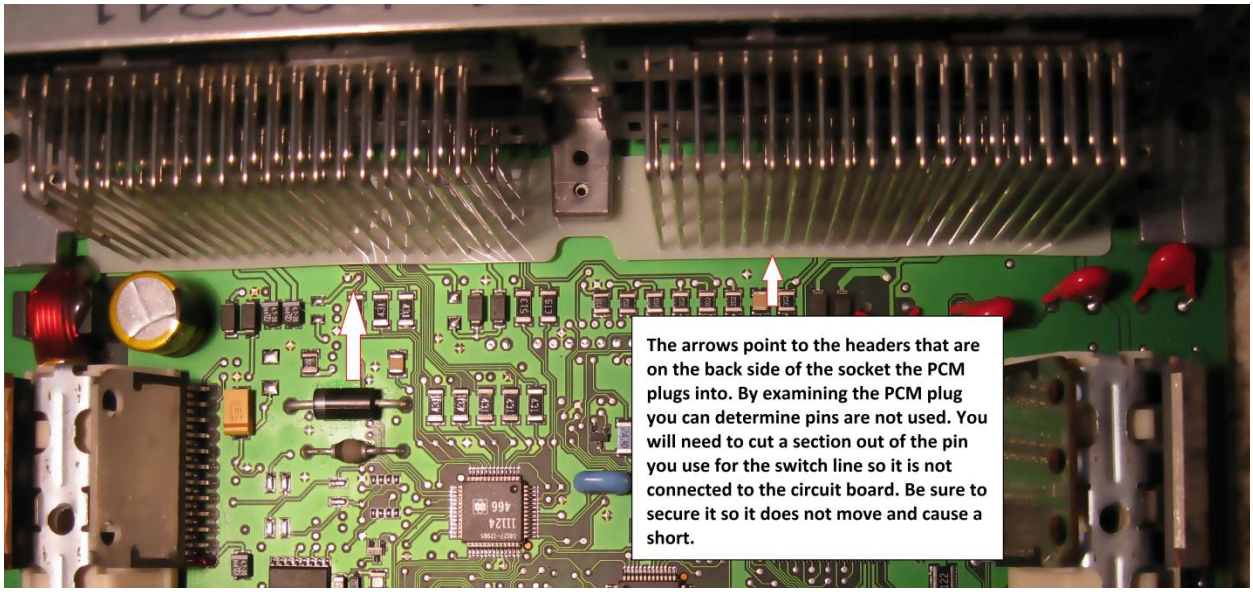
Now that you know where the connectors are on the DUAL-FLASH it is time to connect them to the PCM. GM PCMs all have a 5 volt constant power supply that is usually located at the pin depicted in RED as show in the illustrations below. Some applications might not use this pin so it is important to test to make sure this pin indeed supplies 5 volts when the vehicle is running and turned off.



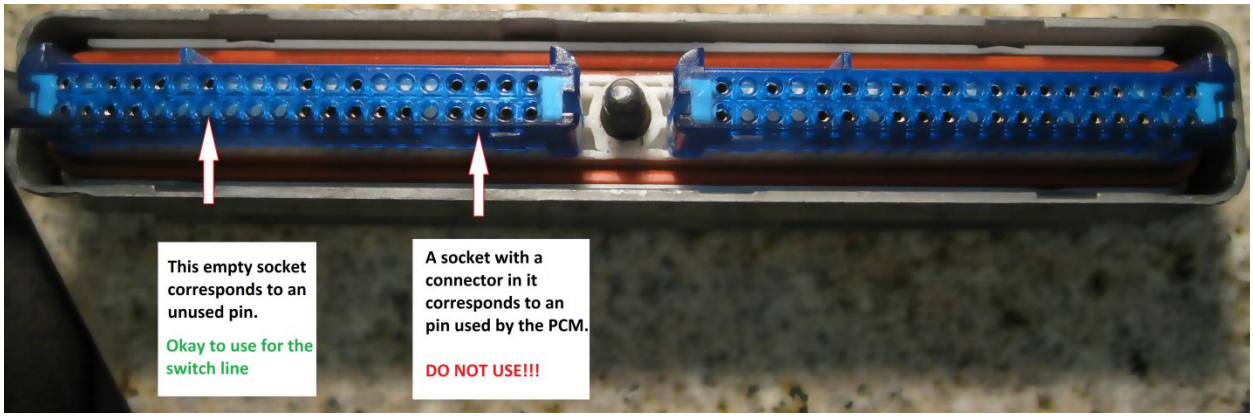


Once you are sure that you have located the 5 volt constant supply, solder a wire from it to the DUAL-FLASH's 5VOA connection. Make sure this wire is long enough to allow the DUAL_FLASH to be plugged into its adaptor and for the wire to be secured to prevent it from moving during operation.

The remaining connection that must be soldered in the PCM is the flash select line. The flash select line can be connected to an unused pin of the PCM connector header. Look at the PCM's plug to find a pin that is not used. Once you have found an unused pin, disconnect that pin in the PCM's header and secure it with epoxy or hot glue to keep it in place. Once the pin is secure you will need to solder a wire from this pin in the header to the SEL connector of the DUAL-FLASH unit. To help make this process clear please review the illustrations below.



The above image shows the headers and the pins that connect to the PCM circuit board and then protrude through the back side of the PCM socket. By looking at the PCM plug to find an unused pin you can determine which pin in the header it corresponds with comparing the plug and socket.



Notice the PCM plug in the picture above and pay close attention to the pin sockets. Some of them are used while others are not used on various applications. The ones that are not used do not have a metal connector in them or a wire running out of the other side of the plug.

Now that you have soldered the select line from an unused pin in the header to the SEL line of the DUAL-FLASH you can plug the DUAL-FLASH into the DUAL-FLASH adaptor on the PCM's circuit board. Be sure the flash chips on the DUAL-FLASH are orientated in the same direction as the original flash you removed. Be VERY careful to plug the DUAL-FLASH into its adaptor so that all the pins are lined up with socket. It is very easy to be off by a pin or two and not realize the unit is not plugged in properly. Once you are sure the DUAL-FLASH is plugged in correctly apply a bead of GE clear silicone between the PCM circuit board and the socket on the back of the DUAL-FLASH. This is to insure DUAL-FLASH does not come loose while driving but will still allow you to remove it if necessary. You might want to wait to complete this step until you have tested to insure your installation is successful.

The next step is to decide where you want to mount the toggle switch. Radio Shack carries several appropriate switches or for more selections visit http://www.mouser.com. All that is required of the switch is that in one position it is open and in the other position it is closed and it is NOT a momentary switch.

Once you choose the position of you switch; run a line to connect it to the switch line you soldered in your PCM. It is recommended that you use a wire that will handle the heat of any hot components it may be near. Once you run the wire to the PCM you will need to install it into the PCM plug using the unused socket you select for your switch line. The kit you received comes with a new socket that you can insert directly into the PCM plug. Crimp the switch wire to this connector before inserting it. You should also solder the wire in addition to crimping it to insure you have a good connection.

This plug is used to insert the switch wire into the PCM connector.

Inserting the new socket will require you to disassemble the PCM connector. Disassembly can take a little time and you need to be careful not to break any of the clear plastic retaining brackets when taking the connector apart. The screw that is used to hold the PCM plug into the PCM has a washer that will make it difficult to remove from the plug for disassembly. You may need to cut this washer to remove the screw from the plug.

Now that the switch wire is connected to the PCM, connect it to one side of your toggle switch. Connect the other side to a very good ground. If you do not have a good ground the DUAL-FLASH will not switch. If you are not sure if you have a good ground you can run another line to the PCM and ground that line to the case of the PCM. Running a ground line to the switch will insure proper operation.

At this point you should have the DUAL-FLASH installed and ready for testing. Before you start the vehicle you must flash your PCM with the DUAL-FLASH switch in each position. To do this simply flash the PCM like you would normally with your desired calibration on each flash chip. Now you can start your vehicle. Assuming there are no problems, make sure that the PCM is properly mounted in the car and clean up any other loose ends. The installation is complete.

Digital Inflection Corporation would like to thank you for purchasing a DUAL-FLASH unit and we hope that you enjoy it. You can check for new products and other updates at http://www.OmniTuner.com.