Air Shift Module

User Manual

Important – leave the shift solenoid connector unplugged until you have configured the shift input polarity and verified correct operation!

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These instructions are written to be comprehensive and detailed to make the installation of this product go as smoothly as possible. No instructions can be a substitute for the mechanical experience necessary to properly complete this project. Therefore, if after reviewing this document you have any doubts about your skills or experience we strongly urge you to seek professional assistance.

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About

The RSR-ASM Engine Kill/Auto Shift module can be configured to operate as only engine kill or it may optionally be configured to operate as an auto shift with integrated engine kill.

A built-in shift counter allows up to five gear shifts to be selected. This allows a different kill time and/or shift rpm for each gear.

The RSR-ASM can be used to kill the engine using the ignition coil(s) or fuel injectors.

A +12-volt activation input enables the shift count (and optionally auto shift) function and also provides power to the shift solenoid.

Operational Overview

Important – always keep the activation input OFF until you have verified correct shift input operation and are ready to enable shifts.

Important – if the shift input is always ON without the shift button depressed check to make sure you have selected the correct shift input polarity!

At power on the module will start into the selected operating mode, engine kill only or auto shift with engine kill. The selected shift input polarity will be configured and a check of the shift input is performed. If the shift input is ON at power up no engine kill or shifts will be allowed until the shift input turns OFF.

The module is now ready to control engine kill and/or auto shift functions. The activation input must be ON to enable the shift solenoid output. Once the activation is input is ON a shift input signal will turn on the shift solenoid. The module will wait to enable the engine kill for the amount of time programmed in the solenoid advance time setting. This setting gives the shift solenoid time to open and begin pressurizing the shift cylinder before the engine kill occurs.

If engine kill only mode is selected the gear count will increment only when the shift input is applied. If the module is configured for auto shift mode, the gear count will be incremented with either a shift input signal or when the programmed shift rpm is reached and an auto shift occurs. The shift input can be used to shift any time even when auto shift mode is selected. Once the gear positon is equal to the shift count setting the auto shift function will be disabled, however the shift input can still be used to shift.

When the activation input is turned OFF the shift count will be reset to gear position one. When using auto shift mode if the engine rpm drops below 2000 rpm the shift count will be reset even if the activation input is ON.

The engine kill function controls the positive voltage to either the ignition coils or the injectors. When the engine kill is active the voltage to the ignition coils or injectors will be turned off for the amount of kill time programmed. If the kill time is set to 0 no engine kill will occur.

Important Information

Do not submerge in water or spray with a pressure wash system.

Do not mount close to exhaust components or areas of high heat source.

Do not mount in a location where wires and/or other objects may hit the programming buttons during operation.

When using a conventional style ignition coil (Not Coil on Plug) you must use Static Suppression Ignition Wires with this Controller.

It is the responsibility of the purchaser to follow all guidelines and safety procedures supplied with this product and any other manufactures product used with this product. It is also the responsibility of the purchaser to determine compatibility of this device with the vehicle and other components.

Schnitz Racing assumes no responsibility for damages resulting from accident, improper installation, misuse, abuse, improper operation, lack of reasonable care, or all previously stated reasons due to incompatibility with other manufacturer's products.

Schnitz Racing assumes no responsibility or liability for damages incurred from the use of products manufactured or sold by Schnitz Racing on vehicles used for competition racing. Schnitz Racing neither recommends nor approves the use of products manufactured or sold by Schnitz Racing on vehicles which may be driven on public highways or roads, and assumes no responsibility for damages incurred from such use.

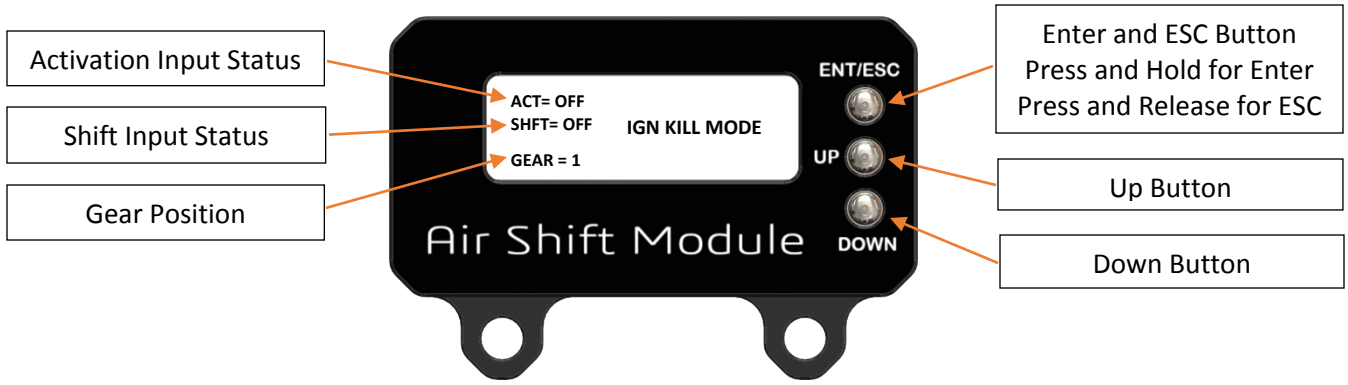
Schnitz Racing does not recommend nor condone the use of its products for illegal street racing.

Warranty

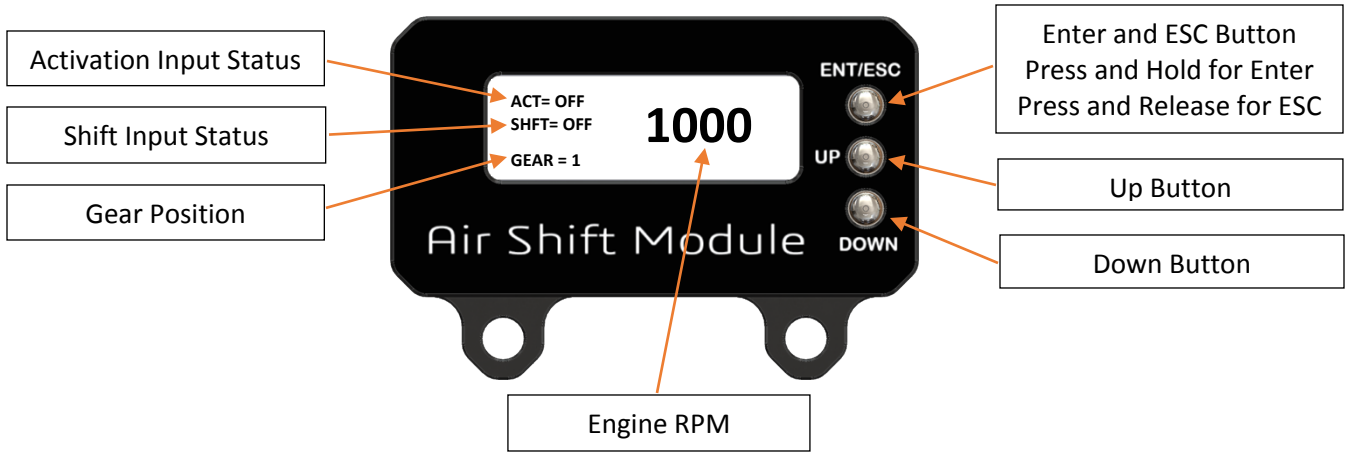
Schnitz Racing warrants to the original purchaser that the controller shall be free from defects in parts and workmanship under normal use for 180 days from the date of purchase.

Schnitz Racing obligation under this warranty is limited to the repair or replacement of any component found to be defective when returned postpaid to Schnitz Racing. The Controller must be returned with evidence of place and date of purchase or warranty will be void. The warranty will not apply if the controller has been installed incorrectly, repaired, damaged, or tampered with by misuse, negligence or accident.

Engine Kill Mode



Auto Shift Mode



Set Operating Mode

The operating mode determines if the module is in Engine Kill Only mode or Auto Shift Mode. To use the Auto Shift Mode the tach input wire must be connected and the proper tach input frequency selected. Use the RPM display to verify the correct RPM.

Change Operating Mode

1 – Press the “Down” button to open the setup menu.

2 – Press and release the “Down” button until “ENGINE KILL MODE” or “AUTO SHIFT MODE” is highlighted.

3 – Press and hold the “ENT/ESC” button until the mode select menu opens.

4 – Use the “Up” and “Down” buttons to select the desired operating mode.

5 – Press and hold the “ENT/ESC” button to accept the selected operating mode. The module will reset and startup in the selected operating mode now. If no change is made the module will return to the setup menu.

6 – Press and release the “ENT/ESC” button to exit without changing this setting. This will return to the setup menu. Press and release “ENT/ESC” to exit the setup menu if desired.

Set Engine Kill Time

The engine kill time can be set for each gear shift. If the Shift Count setting is set to 1 only one kill time can be programmed. If the Shift Count setting is greater than 1 the number of kill time settings will be equal to the Shift Count setting. If the shift input is activated and the activation input is off an engine kill will occur. This provides a method to test this function (no kill will occur if the 1-2 kill time is set to 0). Once the activation is turned on each shift input sequence will increment to the next gear position up to the Shift Count setting.

Valid range 0 to 150 milliseconds in 1 millisecond increments.

Important - Once the activation input is on the shift solenoid will be enabled and the solenoid will be turned on with each shift input.

Change Kill Time Setting(s)

1 – Press the “Down” button to open the setup menu.
2 – Press and release the “Down” button until “SET KILL TIME” is highlighted.
Note – if the module is to Engine Kill Mode the “SET KILL TIME” will be highlighted when entering the setup menu.
3 – Press and hold the “ENT/ESC” button until the kill time menu opens.
4 – Use the “Up” and “Down” buttons to select the desired gear position kill time.
5 – Press and hold the “ENT/ESC” button to enter edit mode for the selected kill time.
6 – Use the “Up” and “Down” buttons to adjust the kill time.
7 – Press and hold the “ENT/ESC” button until the new value is saved.
8 – Press and release the “ENT/ESC” button to exit back to the kill time menu without saving the setting.
9 – Press and release the “ENT/ESC” button to return to the setup menu, press and release again to return to the main screen.

Set Shift Count

The shift count setting determines the total number of gear shifts that you wish to use.

Valid range 1 to 5.

Change Shift Count Setting

1 – Press the “Down” button to open the setup menu.
2 – Press the and release the “Down” button until “SHIFT COUNT = X” is highlighted.
3 – Press and hold the “ENT/ESC” button to enter edit mode.
4 – Use the “Up” and “Down” buttons to adjust the setting.
5 – Press and hold the “ENT/ESC” button until the new value is saved.
6 – Press and release the “ENT/ESC” button to exit without changing this setting. This will return to the setup menu. Press and release “ENT/ESC” to exit the setup menu if desired.

Set Solenoid Advance Time

The solenoid advance setting determines the amount of that the shift solenoid is turned on before the engine kill occurs. This feature allows the air to begin filling the shift cylinder before the engine kill occurs. For most applications, the default setting of 20 milliseconds will work fine. If the shift solenoid is more than 10 inches away from the shift cylinder a longer advance time may be needed.

Valid range 10 to 40 milliseconds in 1 millisecond increments.

Change Solenoid Advance Time Setting

1 – Press the “Down” button to open the setup menu.
2 – Press the and release the “Down” button until “SOLENOID ADVANCE = X” is highlighted.
3 – Press and hold the “ENT/ESC” button to enter edit mode.
4 – Use the “Up” and “Down” buttons to adjust the setting.
5 – Press and hold the “ENT/ESC” button until the new value is saved.
6 – Press and release the “ENT/ESC” button to exit without changing this setting. This will return to the setup menu. Press and release “ENT/ESC” to exit the setup menu if desired.

Set Shift Input Polarity

The shift input polarity setting determines whether the shift is active with a Ground or +12-volt input signal. Use the Shift Input Status readout on the display to ensure correct operation.

Important – leave the shift solenoid connector unplugged until you have configured the shift input polarity and verified correct operation!

Change Shift Input Polarity Setting

1 – Press the “Down” button to open the setup menu.
2 – Press the and release the “Down” button until “SHIFT INPUT = X” is highlighted.
3 – Press and hold the “ENT/ESC” button to open the shift input polarity menu.
4 – Use the “Up” and “Down” buttons to adjust the setting.
5 – Press and hold the “ENT/ESC” button until the new value is saved. The module will reset and startup with the new shift input polarity selected. If no change is made the module will return to the setup menu.
6 – Press and release the “ENT/ESC” button to exit without changing this setting. This will return to the setup menu. Press and release “ENT/ESC” to exit the setup menu if desired.

Auto Shift Operating Mode

Set Auto Shift RPM

The Auto Shift RPM can be set for each gear position. If the Shift Count setting is set to 1 only one RPM can be programmed. If the Shift Count setting is greater than 1 the number of RPM settings will be equal to the Shift Count setting.

The shift rpm settings must be +/-2000 RPM of the 1-2 rpm setting. When adjusting the settings, this rule will be applied. When adjusting the 1-2 RPM setting the remaining settings will be automatically adjusted to satisfy this requirement. Always verify all of the desired RPM settings after adjusting the 1-2 rpm.

The activation input must be on (+12-volt applied) to enable the auto shift function. If the shift input is applied before the auto shift RPM is reached a shift override will occur and the shift count (gear position) will be incremented. Once the gear position equals the shift count setting no more auto shifts are allowed, however the shift input can still be used to initiate a shift.

The shift solenoid will remain on for a maximum of .4 second or the engine RPM drops 200 RPM below the shift RPM.

Valid range 2000 to 16000 RPM in 10 RPM increments.

Change Auto Shift RPM Setting(s)

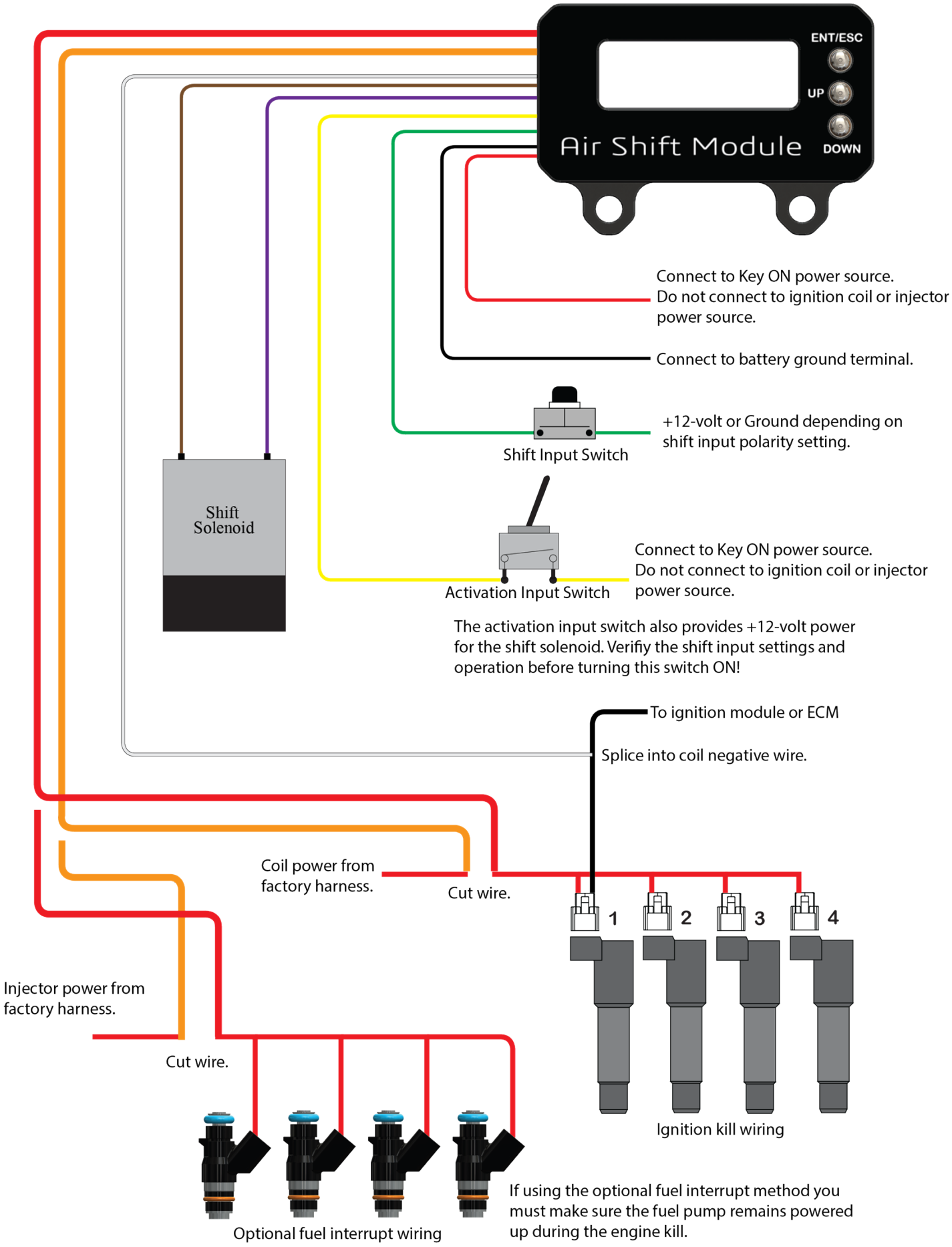
1 – Press the “Down” button to open the setup menu.
2 – Press and release the “Down” button until “SET SHIFT TIME” is highlighted.
3 – Press and hold the “ENT/ESC” button until the shift rpm menu opens.
4 – Use the “Up” and “Down” buttons to select the desired gear position shift rpm.
5 – Press and hold the “ENT/ESC” button to enter edit mode for the selected shift rpm.
6 – Use the “Up” and “Down” buttons to adjust the shift rpm.
7 – Press and hold the “ENT/ESC” button until the new value is saved.
8 – Press and release the “ENT/ESC” button to exit back to the kill time menu without saving the setting.
9 – Press and release the “ENT/ESC” button to return to the setup menu, press and release again to

Set Tach Input Frequency

The tach input frequency setting determines the number of pulses the tach input receives per one revolution of the crankshaft. The exception is the "1 PULSE PER 2 REV" setting, this is used for modern fuel injected systems that only fire the sparkplug once every 2 revolutions of the crankshaft.

Change Tach Input Frequency Setting

1 – Press the “Down” button to open the setup menu.
2 – Press the and release the “Down” button until tach input frequency setting is highlighted.
3 – Press and hold the “ENT/ESC” button to open the tach input frequency menu.
4 – Use the “Up” and “Down” buttons to adjust the setting.
5 – Press and hold the “ENT/ESC” button until the new value is saved. 6 – Press and release the “ENT/ESC” button to exit without changing this setting. This will return to the setup menu. Press and release “ENT/ESC” to exit the setup menu if desired.


ENT/ESC
UP
DOWN
Air Shift Module
Connect to Key ON power source.
Do not connect to ignition coil or injector power source.
Connect to battery ground terminal.
+12-volt or Ground depending on shift input polarity setting.
Shift Input Switch
Shift Solenoid
Activation Input Switch
Connect to Key ON power source.
Do not connect to ignition coil or injector power source.
The activation input switch also provides +12-volt power for the shift solenoid. Verifiy the shift input settings and operation before turning this switch ON!
To ignition module or ECM
Splice into coil negative wire.
Coil power from factory harness.
Cut wire.
1
2
3
4
Injector power from factory harness.
Cut wire.
Ignition kill wiring
Optional fuel interrupt wiring
If using the optional fuel interrupt method you must make sure the fuel pump remains powered up during the engine kill.

Coil Wiring with MSD Launch Master.

The MSD Launch Master gets its +12v power from the ignition coil harness. You must install the MSD Launch Master into the stock wiring harness first then install the ASM harness in between the Launch Master harness and the ignition coils. This is to ensure power is not interrupted to the Launch Master, causing it to reboot at every shift

Coil Wiring with Power Commander Ignition Module.

The Power Commander Ignition Module gets its +12v power from the ignition coil harness. You must install the Power Commander Ignition Module into the stock wiring harness first then install the ASM harness in between the Ignition Module harness and the ignition coils. This is to ensure power is not interrupted to the Ignition Module, causing it to reboot at every shift.

Injector Wiring with Power Commander.

The Power Commander gets its +12v power from the fuel injector harness. You must install the Power Commander into the stock wiring harness first then install the ASM harness in between the Power Commander harness and the fuel injectors. This is to ensure power is not interrupted to the Power Commander, causing it to reboot at every shift.