Instruction Manual

AEM PERFORMANCE ELECTRONICS

STOP!

THIS PRODUCT HAS LEGAL RESTRICTIONS.
READ THIS BEFORE INSTALLING/USING!

THIS PRODUCT MAY BE USED SOLELY ON VEHICLES USED IN SANCTIONED COMPETITION WHICH MAY NEVER BE USED UPON A PUBLIC ROAD OR HIGHWAY, UNLESS PERMITTED BY SPECIFIC REGULATORY EXEMPTION. (VISIT THE "EMISSIONS" PAGE AT HTTP://WWW.SEMASAN.COM/EMISSIONS FOR STATE BY STATE DETAILS.)

IT IS THE RESPONSIBILITY OF THE INSTALLER AND/OR USER OF THIS PRODUCT TO ENSURE THAT IT IS USED IN COMPLIANCE WITH ALL APPLICABLE LAWS AND REGULATIONS. IF THIS PRODUCT WAS PURCHASED IN ERROR, DO NOT INSTALL AND/OR USE IT. THE PURCHASER MUST ARRANGE TO RETURN THE PRODUCT FOR A FULL REFUND.

THIS POLICY ONLY APPLIES TO INSTALLERS AND/OR USERS WHO ARE LOCATED IN THE UNITED STATES; HOWEVER CUSTOMERS WHO RESIDE IN OTHER COUNTRIES SHOULD ACT IN ACCORDANCE WITH THEIR LOCAL LAWS AND REGULATIONS.

WARNING: This installation is not for the tuning novice! Use this system with EXTREME caution! The AEM Infinity Programmable EMS allows for total flexibility in engine tuning. Misuse or improper tuning of this product can destroy your engine! If you are not well versed in engine dynamics and the tuning of engine management systems DO NOT attempt the installation. Refer the installation to an AEM-trained tuning shop or call 800-423-0046 for technical assistance.

NOTE: All supplied AEM calibrations, Wizards and other tuning information are offered as potential starting points only. IT IS THE RESPONSIBILITY OF THE ENGINE TUNER TO ULTIMATELY CONFIRM IF THE CALIBRATION IS SAFE FOR ITS INTENDED USE. AEM holds no responsibility for any engine damage that results from the misuse or mistuning of this product!

Overview

The 30-3512 AEM Infinity Adapter Kit was designed for the 2006-2008 Mitsubishi EVO 9. This is a true standalone system that eliminates the use of the factory ECU. The base configuration files available for the Infinity EMS are starting points only and will need to be modified for every specific application.

The available AEM Infinity EMS part numbers for this adapter kit are:
- 30-7106 INFINITY-6
- 30-7108 INFINITY-8h**

MODELS
- 2006-2008 Standard, 5-Speed Manual Transmission
- 2006-2008 RS, 5-Speed Manual Transmission
- 2006-2008 SE, 5-Speed Manual Transmission
- 2006-2008 MR, 6-Speed Manual Transmission

Kit Contents

Qty	Part Number	Description
1	36-3512	Mitsubishi EVO 9 PnP Harness
1	4-1009	Flash Enable Dust Cap
1	4-1010	Flash Enable Jumper
1	4-1008	12-Pin Auxiliary Connector
12	1062-20-0122	Auxiliary Connector Socket
2	8-500	Hook Velcro, 2" Wide x 6" Long
2	8-501	Loop Velcro, 2" Wide x 6" Long
2	4-0005-1	Tubing, Heat Shrink 3/16" x 1"
2	1-117-B	Zip Tie, 4"
1	35-3011	Comms Cable, Locking Right Angle 39"
1	10-3512	Instructions

OPTIONS

30-2130-50 3.5Bar Stainless Steel MAP Sensor Kit
To be wired in place of stock 1 Bar boost sensor for speed density airflow calculation with AEM Infinity ECU.

30-2010 Air Temperature Sensor Kit
To be wired in place of stock IAT (locaed in MAF sensor) for speed density airflow calculation with AEM Infinity ECU.

30-2001 UEGO Wideband O2 Sensor
Bosch LSU4.2 Wideband O2 Sensor that connects to AEM 30-3600 UEGO Wideband O2 Sensor Extension Harness.

30-3600 UEGO Wideband O2 Sensor Extension Harness
Extension harness to connect AEM UEGO Wideband O2 sensor to 6 pin connector.

30-3602 IP67 Logging Cable
USB A-to-A extension cable: 39" long with right angled connector and bayonet style lock.

30-2400 Boost Control Solenoid Kit
Higher flow rate for increased performance over the stock solenoid.

Important Application Notes

The stock ECU uses mass air flow (MAF) fueling control using a MAF sensor in the intake piping ahead of the turbo. The Infinity only uses Speed Density fueling control for this application and the MAF sensor is not utilized in the adapter. The MAF sensor can be removed if desired to minimize intake system restriction.

INLET AIR TEMPERATURE SENSOR

The stock IAT (Intake Air Temperature) sensor is integrated into the factory MAF sensor, which is at the inlet of the turbocharger. It is recommended that you install an IAT sensor in the charge piping downstream of the intercooler to accurately measure charge temperatures going in to the engine. The AEM IAT Sensor Kit (P/N 30-2010) includes a sensor, wire connector, and aluminum weld-in bung. Many vehicles that have been previously modified for a "speed density" engine management conversion will have an AEM IAT sensor wired into the stock IAT wire. This will work directly with the 30-3512 EVO 9 harness without modification. Alternatively, the IAT signal wire and sensor ground are accessible in the 12 pin Auxiliary connector of the harness for a separate IAT installation. **NOTE: Only one IAT sensor may be connected at any time. If the Auxiliary plug is utilized, the MAF sensor connector <u>must</u> be unplugged, and vice versa.**

MAP SENSOR

The stock ECU references a boost sensor that only reads up to 1 Bar. You <u>must</u> replace it with a different MAP sensor that will read up to your maximum desired boost level. It is recommended to use an AEM 3.5 bar MAP sensor or higher (P/N 30-2130-50). There are aftermarket MAP sensors available that are a direct fit in place of the stock one, and do not require modifying the wiring.

LAMBDA SENSOR

The adapter harness includes a gray 6 pin "Lambda" plug for connecting a UEGO wideband Bosch LSU4.2 sensor (P/N 30-2001). The optional UEGO extension harness (AEM 30-3600) mates the adapter harness to the sensor for a plug and play installation.

FUEL INJECTORS

The Infinity-6 includes user-configurable Peak and Hold injector drivers for controlling wither high- or low-impedance fuel injectors. The stock Mitsubishi injectors are low impedance, but because the stock ECU does not have peak and hold capabilities there is a resistor pack (shown below) to prevent excessive current to the stock ECU's saturated injector drivers.

REMOVAL STEPS
1. FUEL PUMP RELAY
2. INJECTOR RESISTOR
3. BRACKET
4. FUEL PUMP CIRCUIT RESISTOR
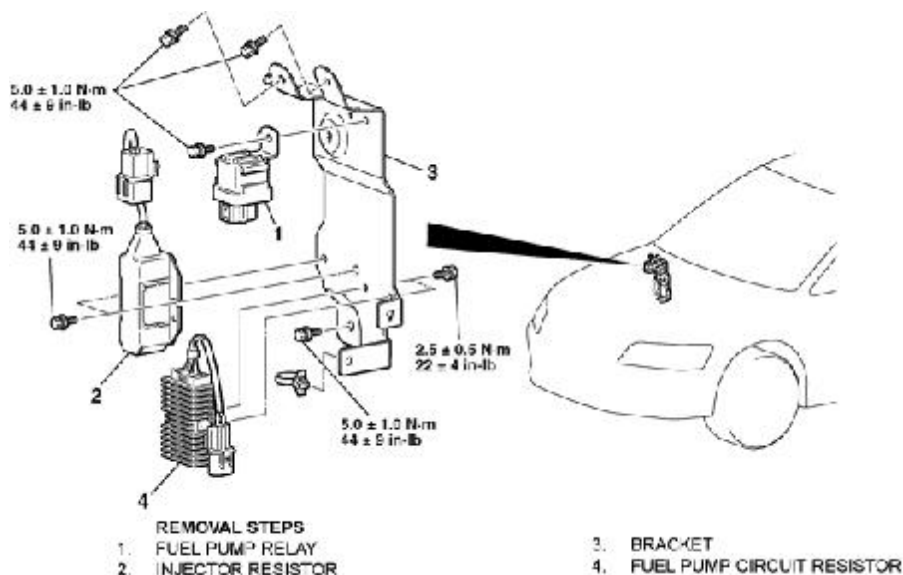
With the Infinity-6 EMS installed, users can elect to remove and bypass the OEM resistor pack for more precise control of low-impedance injectors. The resistor pack does NOT have to be modified or bypassed with the OEM injectors. However, if high impedance injectors will be used, the resistor pack MUST be removed. To eliminate the "injector resistor" circuit, unplug the connector and jump the main Red/Yellow wire directly to all 4 red injector wires (as depicted below). ****Note: High impedance (saturated, high-z) fuel injectors MUST be used with the Infinity-8h.**
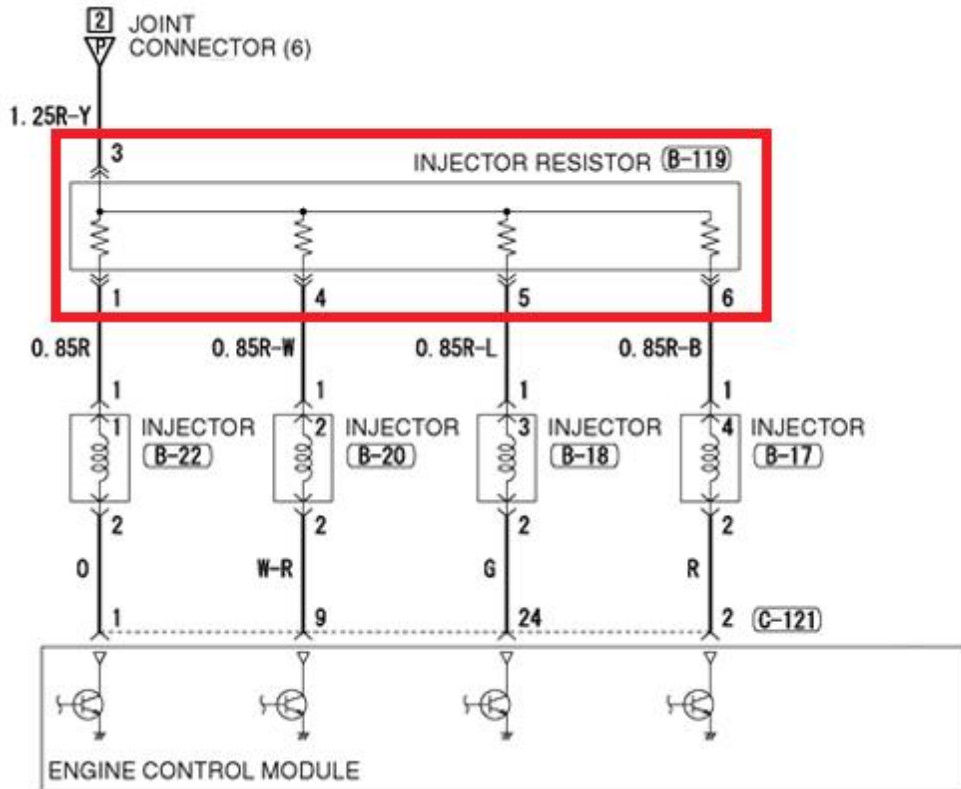
IGNITION COILS

The Mitsubishi EVO 9 uses 2 wasted spark ignition coils, which the Infinity controls directly. Because these "smart" coils have built-in igniters, new "dumb" coils must be used if an aftermarket capacitive discharge ignition (CDI) system is to be installed. Some aftermarket ignition systems require a rising edge trigger, in which case an external igniter would also need to be used. For conversion to a fully sequential ignition system, trigger signals for Coil 3 and Coil 4 are provided in the 12 pin auxiliary connector of the adapter harness. All Infinity ignition coil outputs feature a 0-5V falling-edge fire signal, 25mA max source current.

MIVEC

MIVEC stands for "Mitsubishi Innovative Valve timing Electronic Control". The EVO 9 uses a variation of this system that allows up to 31 degrees of intake cam timing adjustment (31 crankshaft degrees). This feature is programmable and preconfigured with the provided base session file.

BOOST CONTROL

The Mitsubishi EVO boost solenoid can be used and is setup in the base session file for low boost. There is no wiring necessary. We have found through testing that the amount of boost the engine will make with the stock turbo is limited because of the low air flow capacity of the stock boost control solenoid. You may want to replace the stock boost control solenoid with a higher flowing version which will allow you to run a higher boost level and will also reduce the amount boost taper at higher engine speeds. The AEM Boost Control Solenoid 30-2400 can be used as a replacement for the stock solenoid. This solenoid has an outstanding pressure range rating and accepts 1/8" NPT for high boost applications.

Getting Started

Your Infinity EMS will be packaged with four important documents: Usage Legality Disclaimer, Software Download Notice, Security Code Notice, and an Infinity Quick Start Guide.
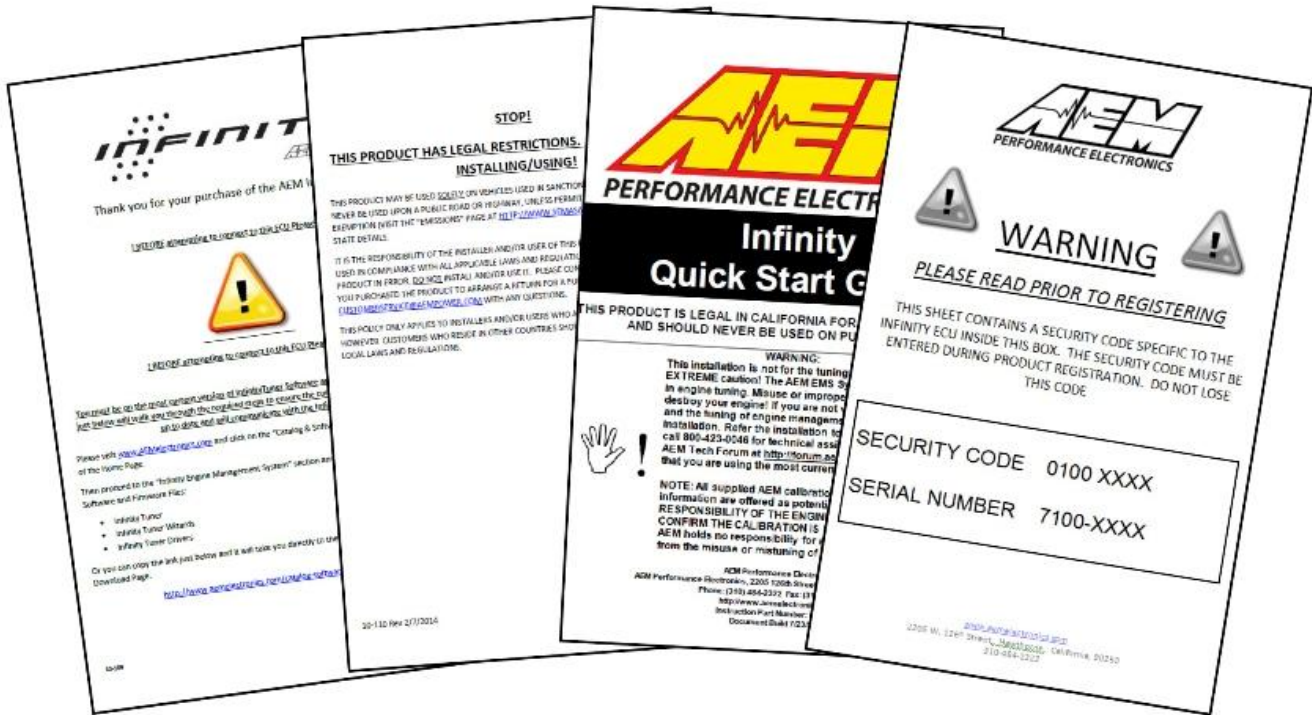
First, read and acknowledge the Usage Legality Disclaimer. Second, refer to the Infinity Quick Start Guide (QSG). Third, follow the Software Download Notice and download the Infinity Tuner software, wizards, and drivers from the AEM Electronics web site (section 2.1 in QSG). Fourth, visit www.aeminfinity.com to register your EMS (section 3.2 in QSG). Once the registration process is complete, you'll be able to download the latest firmware for your EMS. The final setup process is to open the Infinity Tuner software and connect to your EMS to update the firmware (section 3.3 in QSG). This can be done once the EMS is installed into your vehicle - see Infinity EMS Installation.

Once the Infinity is installed into your vehicle and it has been loaded with the latest firmware, setup and tuning may commence. Refer to the QSG for additional information on getting the engine ready for tuning with the Infinity EMS. Additionally, the full Infinity User Manual can be referenced for more in-depth information pertaining to the install, setup, and usage of the Infinity EMS.

**Important Infinity-8h Information

This plug and play adapter kit has specifically been designed to be used with the 30-7106 Infinity-6. While the 30-7108 Infinity-8h can be used, it will result in the loss of several OEM vehicle functions. Pins C1-31 and C1-32 **MUST** be removed from the 80 pin connector if using this adapter harness with an Infinity-8h. Also, the Infinity-8h does not have Peak & Hold injector drivers to run low impedance fuel injectors. High impedance (saturated, high-z) fuel injectors **MUST** be used with the Infinity-8h.

| Infinity Pin	Infinity-6 Function	Infinity-8h Function	EVO 9 Adapter Pin/Function	Infinity-6 Notes	Infinity-8h Notes
C1-3	Low side6	Injector7	Pin 20 / AC Compressor Clutch Relay	AC Compressor Clutch Relay	Available injector output
C1-4	Low side7	Injector8	Pin 22 / Malfunction Indicator Light	Malfunction Indicator Light	Available injector output
C1-31	Digital6	Coil7	Unused	Available Digital6 input.	Unused, do not populate this position of Infinity 80 pin connector
C1-32	Digital7	Coil8	Pin 88 / Clutch Pedal Switch (USA EVO Only)	Clutch Pedal Switch (USA EVO Only)	Loss of Clutch Pedal input, **MUST** remove pin from Infinity 80 pin connector

Infinity Connectors

The AEM Infinity EMS uses the MX123 Sealed Connection System from Molex. AEM strongly recommends that users become familiar with the proper tools and procedures before attempting any modifications. The entire user manual can be downloaded direct from Molex at:

http://www.molex.com/mx_upload/family//MX123UserManual.pdf
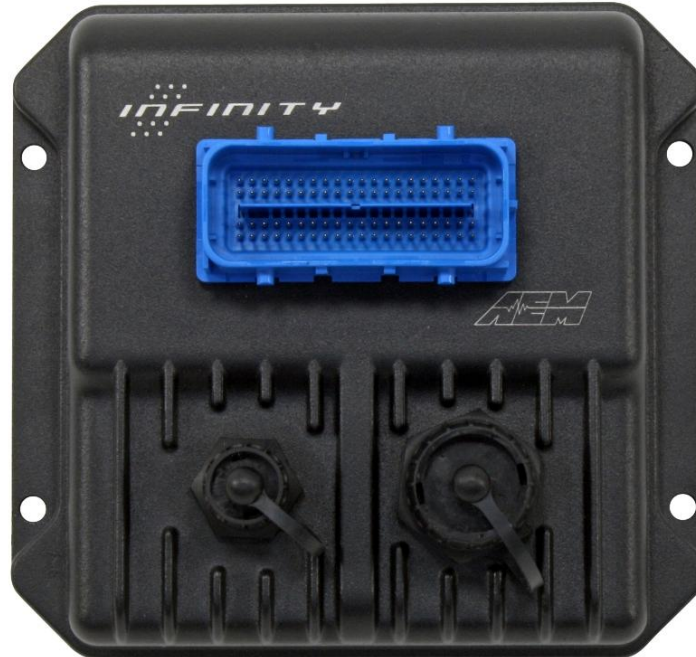
Infinity Adapter Harness

The basis of the 30-3512 EVO 9 Infinity PnP kit is the adapter harness that mates the Infinity ECU with the cars factory wiring harness. This adapter allows for seamless integration of the Infinity EMS onto your vehicle.
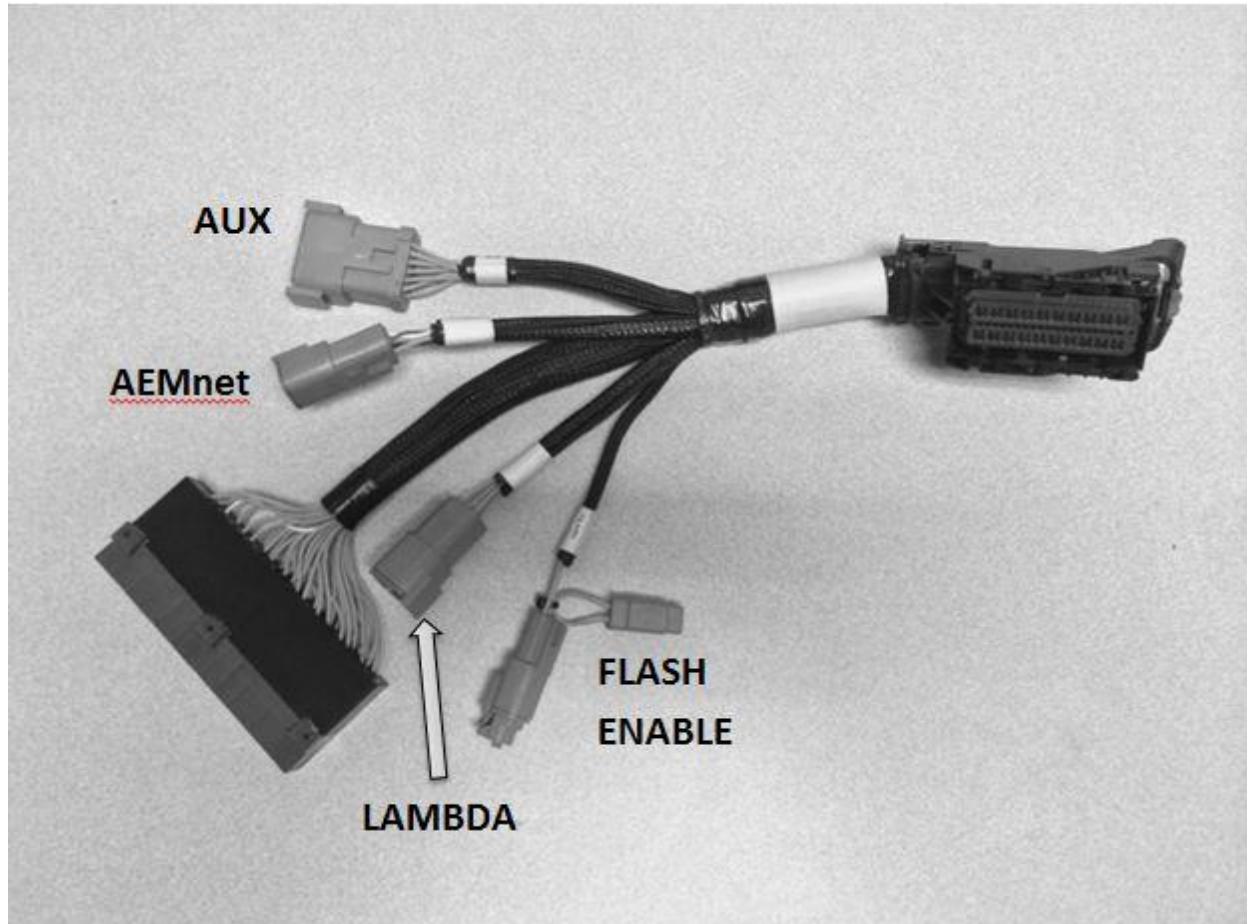
The 4 pin "AEMnet" connector is an open architecture based on CAN 2.0 which provides the ability for multiple enabled devices, such as dashboards, data loggers, etc. to easily communicate with one another through two twisted cables (CAN+/CAN-).

The 2 pin "Flash" connector is used as a secondary hardware flashing option by jumping the two wires together using the included shunt connector. Note: Flashing will normally be performed in the software not using this connector.

The 6 pin "Lambda" connector is for connecting a UEGO wideband Bosch LSU4.2 sensor (AEM 30-2001). The UEGO extension harness (AEM 30-3600) mates the adapter harness to the sensor.

Integrated in the adapter harness is an "auxiliary" connector. This is a Deutsch DTM 12P connector and is used to adapt many common ancillary inputs and outputs easily. Included in the kit are a DTM 12P mating connector, 12 DTM terminals, and a DTM 12P wedgelock. If used, these components will need to be terminated by the installer or end user with 16-22awg wire (not included). Note: the pin numbering is based on the numbers molded into the connector.

Deutsch Pin	Infinity Pin	Pin Description	Default Pin Function	Notes
1	C1-53	Analog 9	Fuel Pressure	Can be used to monitor fuel pressure for fuel delivery calculation. Use AEM stainless steel 100psig or 150psig sensor (P/N 30-2130-100 or 30-2130-150). See Setup Wizard. Analog input NOT reassignable.
2	C1-40	Analog Temp 3	Oil Temp	Can be used to monitor oil temperature. See Setup Wizard. Can also be used to monitor other temp input.
3	C1-24	Sensor Ground	Sensor Ground	Used as 0V reference for sensors. Do NOT use as power or chassis ground. Connect to sensor ground pins on auxiliary sensors.
4	C1-50	+5V	Sensor Power	Used as 5V reference for sensors. Do NOT use to power any high current loads. Connect to sensor power pins on auxiliary sensor.
5	C1-73	Analog 13	Oil Pressure	Can be used to monitor oil pressure for Engine Protection. Use AEM stainless steel 100psig or 150psig sensor (P/N 30-2130-100 or 30-2130-150). See Setup Wizard. Analog input is also reassignable to other functions.
6	C1-28	Digital 3	Spare Freq Input	Can be used to measure frequency input such as Flex Fuel Sensor or turbo speed or wheel speed, etc. See Setup Wizard.
7	C1-39	Analog Temp 2	Inlet Air Temperature	Can be used to monitor inlet air temperature. Use AEM IAT Sensor Kit (P/N 30-2010). See Setup Wizard. Analog temperature input NOT reassignable.
8	C1-63	+12V	+12v Power	Used as 12v power for auxiliary devices.
9	C1-11	Coil 4	Coil 4	Coil 4 output for conversion to fully sequential ignition. 0-5V falling edge fire. DO NOT connect directly to coil primary. Must use an ignitior or CDI that accepts falling edge fire signal. 25mA max source current.
10	C1-71	Analog 16	Spare Analog Input	0-5V Analog Signal. May be assigned to various functions. See Setup Wizard.
11	C1-12	Coil 3	Coil 3	Coil 3 output for conversion to fully sequential ignition. 0-5V falling edge fire. DO NOT connect directly to coil primary. Must use an ignitior or CDI that accepts falling edge fire signal. 25mA max source current.
12	C1-74	Analog 11	Exhaust Back Pressure	Can be used to monitor exhaust back pressure. Use AEM Exhaust Pressure Install Kit (P/N 30-2064). See Setup Wizard. Analog input is also reassignable to other functions.

Infinity EMS Installation

|	
1. First, open the hood and disconnect the battery. The OEM ECU is located behind the glove box. Open the glove box and empty the contents. From the left side, pop the rubber bump-stop out (as shown). Gently compress the glove box near the nonremoveable bump-stop on the right side.	
2. Swing the glove box all the way down, as shown. To release, pull the glove box towards the rear of the vehicle to disengage from the two hinges.	
3. Once the glove box is removed, the OEM ECU can be seen, as depicted.	
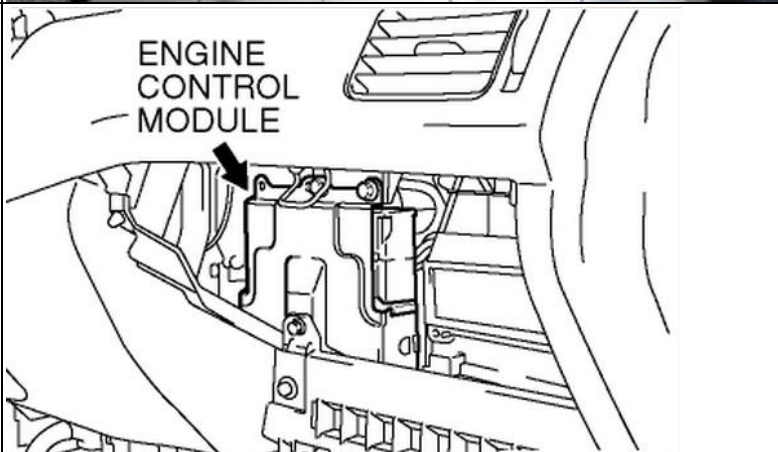
4. Remove the bottom cover of the glove box by pulling towards the rear of the vehicle.

5. Carefully unplug the 3 ECU connectors by depressing the "thumb" lock on each connector.

Avoid excessive stress or pulling on the wires, as this may damage the harness.

6. Use a 10mm socket wrench to remove the top two M6 bolts from the ECU bracket.

Pull the ECU and bracket assembly out from the bottom of the dash.

Release the ECU from the mounting bracket by first removing the third M6 bolt in the center using the 10mm socket wrench.

Next, use a flat head screwdriver to pry the sheet metal retaining tabs on each side.

The ECU will now slide out from the mounting bracket.
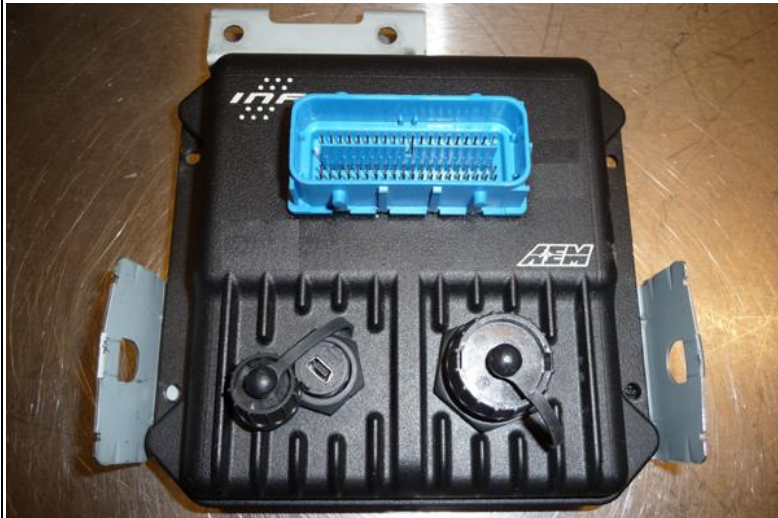
The OEM ECU will not be reused.

5.0 ± 1.0 N·m
44 ± 9 in-lb
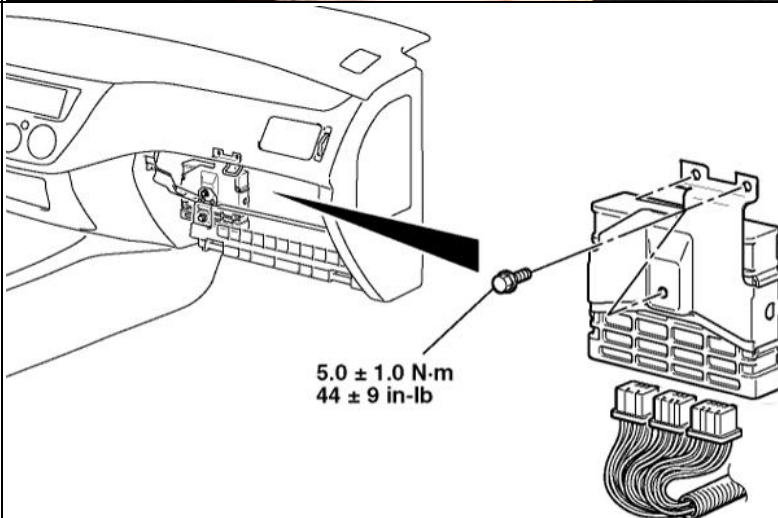
7. Strategically place one side of the provided adhesive hook and loop (Velcro) strips on the mounting bracket, as shown.	
8. Adhere the opposing side of the hook and loop (Velcro) strips on to the bottom side of the Infinity EMS. Gently place the AEM Infinity EMS onto the mounting bracket, as shown.	
9. First, install the included mini USB comms cable to the AEM Infinity EMS (as shown). Next, carefully reinsert the OEM ECU mounting bracket back in the dash with the AEM Infinity EMS attached. Do not reinstall the mounting bracket hardware yet. Reaching your hands into the dash, install the 80-pin connector of the AEM adapter harness to the Infinity and lock down the slider using the red tab.	
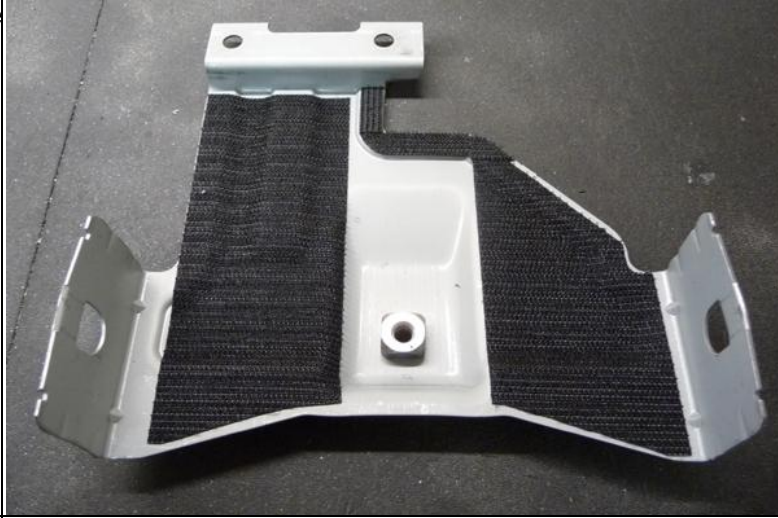
10. Line the OEM ECU bracket with the 2 threaded mounting holes. Note: the comms cable will be a tight fit. Reinstall the two M6 bolts (shown) using a 10mm socket wrench.

Plug the 3 OEM ECU connectors to the header found in the AEM adapter harness.

If any of the auxiliary connections found in the adapter harness are to be installed, now is the time to assemble these.

Note: The UEGO sensor extension harness (sold separately) should be routed away from moving parts and should not come in contact with excessively hot objects. Use an O2 sensor bung that is located pre catalytic converter for accurate results.

11. The Mitsubishi unipolar Stepper Motor (6-pin connector) MUST be modified to be used with the AEM Infinity EMS.

The idle air control motor is located on the bottom side of the intake manifold near the throttle body, as shown.

IDLE AIR CONTROL MOTOR
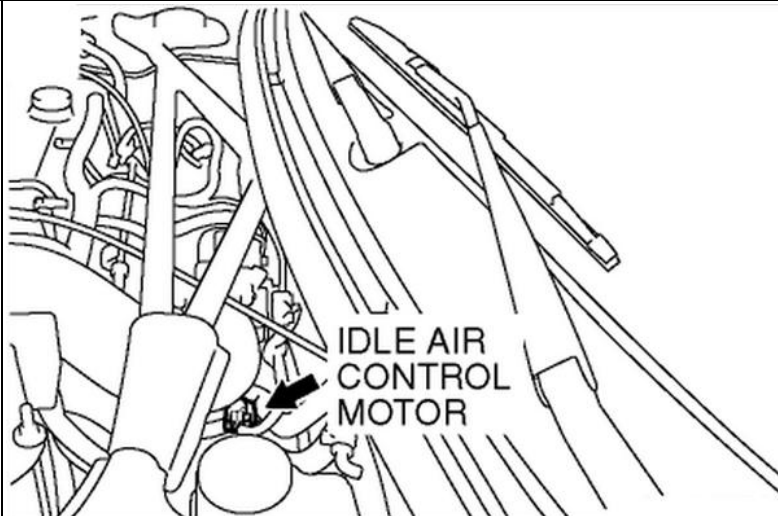
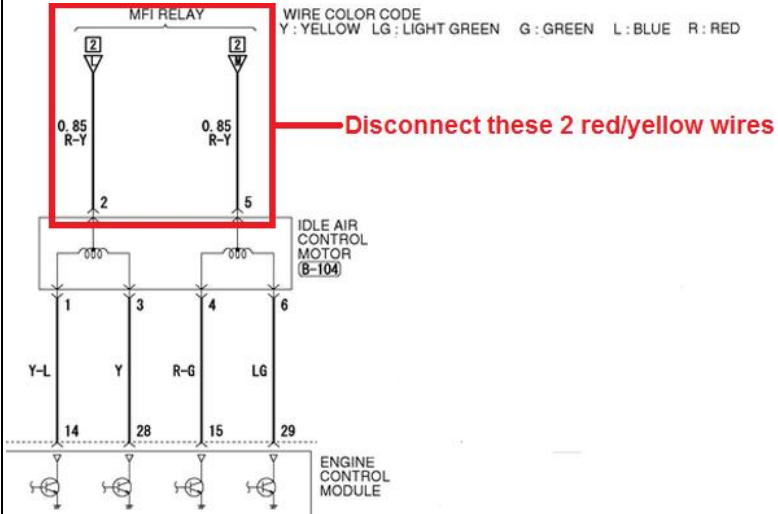|	
12. Release the idle air control motor connector by depressing the thumb tab. Next, using a tool such as a pick with a hook (as pictured), gently remove the green retainer by simply pulling away from the connector.	
13. The 2 center wires (Pin 2 and Pin 5) are Red with a Yellow stripe. These both supply 12V power to the stepper motor in the factory setup. These pins MUST BE DISCONNECTED in order for the AEM Infinity EMS to control this stepper motor type. Note: Non Mitsubishi 4-pin idle stepper motors do not require any modification.	
14. Use a small flat-blade screwdriver (or pick) to gently bend and release the terminal locks.	

15. Simultaneously pull the corresponding Red/Yellow wires out from the backside of the connector, as shown.

16. Use the included heat shrink to insulate both 12V wire terminals.

17. Secure the insulated wire terminals to the loom using the included cable ties, as shown.

Reinstall the retainer and then plug the connector back into the idle air control motor.

Reconnect the battery, and connect to the Infinity Tuner software. After all of the components are verified, reinstall the glove box.

Loading Base Session

There is a provided base session that must be loaded into the Infinity EMS before attempting to start or run the engine. Before the base session can be loaded, the EMS firmware must be updated (section 3.3 in QSG). Once the process of updating the firmware and loading the base cal has been completed, the setup wizards will need to be reviewed and the ignition timing will need to be synced.

1. Connect USB comms cable between ECU and PC.
2. Turn ignition switch on.
3. Open InfinityTuner; connection status should be green and indicate ECU type.
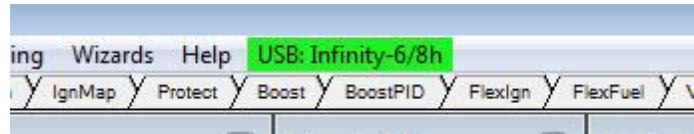
4. Open an Infinity layout: Layout>Open Layout. Layout located in My Documents>AEM>Infinity Tuner>Layouts.
5. Upload base session: File>Import Calibration Data. Base session located in My Documents>AEM>Infinity Tuner>Sessions.
6. After session has loaded, turn ignition switch off, wait for main relay to click off and then turn ignition switch back on.
7. After comms have been reestablished, review Setup Wizard: Plug-ins>Wizard>Setup Wizard.

Setup Wizard

The following is an overview of the basic wizard settings that need to be checked before attempting to start and run an engine. Please refer to the main Infinity user guide for information about the advanced wizard settings.

Basic

Adjust engine displacement if it is different than stock 2.0L. If converting to sequential ignition, change Ignition Type to "Sequential (Coil on Plug)" and Firing Order to "1-3-4-2". Not other changes should be necessary.
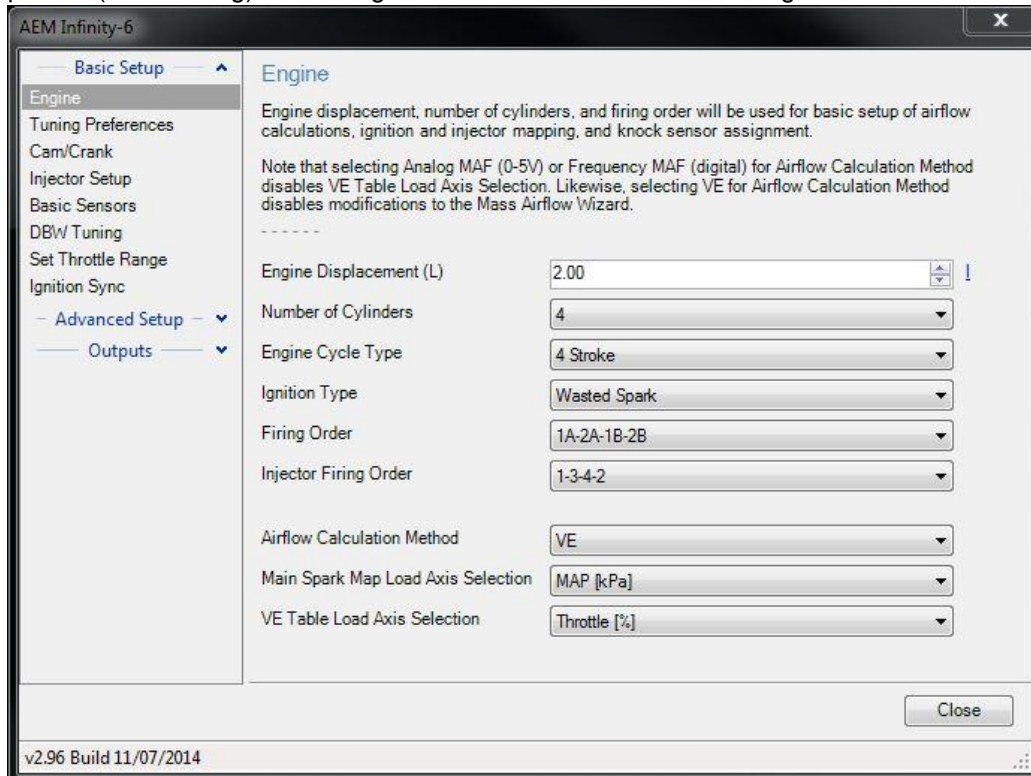
Tuning Preferences

If Key Off Commit is selected, the ECU will automatically save any unsaved changes when the ignition power input (pin C1-48) is turned off. This function could take several seconds to complete. If battery permanent power (pin C1-10) is removed before this action has completed, the ECU may become inoperable and require reprogramming at AEM. It is generally recommend that Key Off Commit be used.
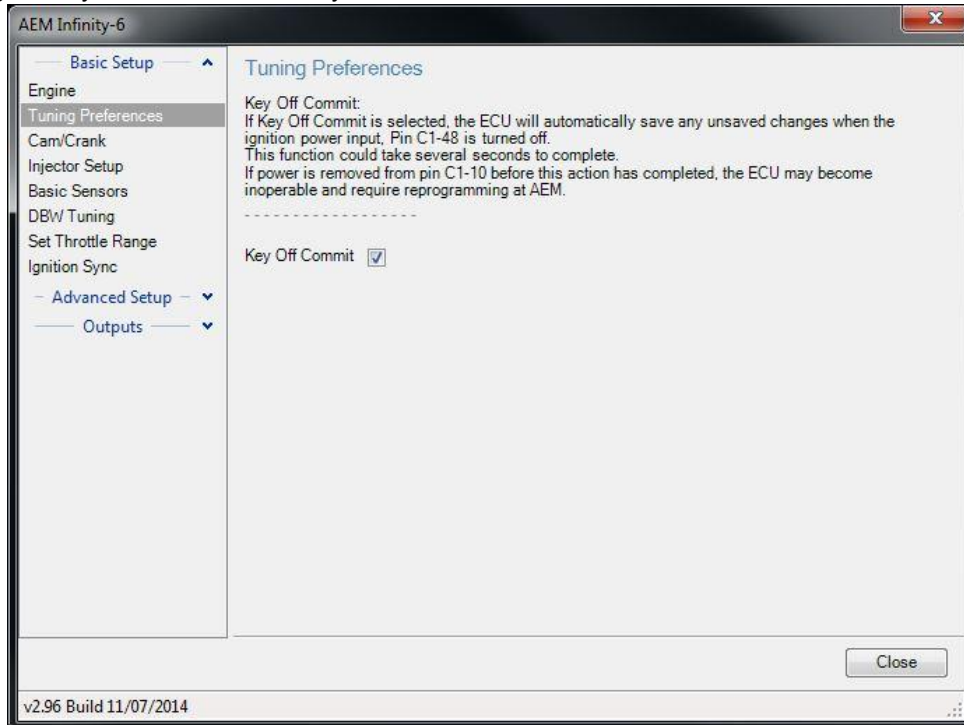
Cam/Crank

The correct cam/crank wizard selection is set for EVO 9 in the base session.
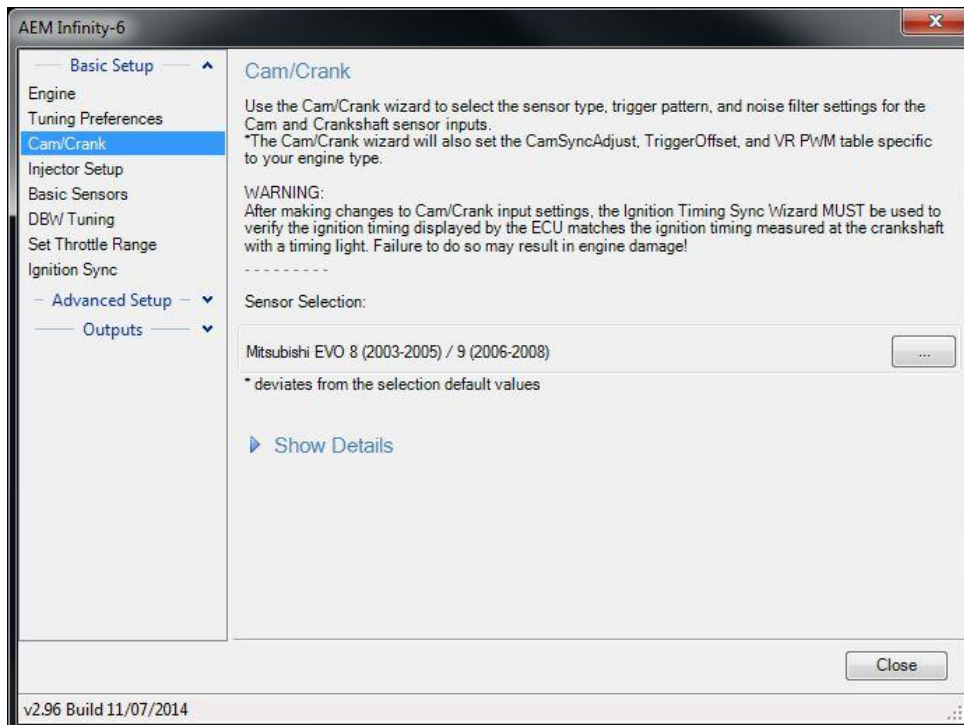
Injector Setup/Flow

Verify number of injectors (high impedance secondary injectors supported with Infinity-8h) and select Primary Injector Fuel Type (gasoline, ethanol, methanol, E85, or flex fuel). Injector phasing values are automatically set based on the firing order selected in the Basic wizard and should not need adjusting. Primary Fuel Pressure Regulator Reference is set to manifold in the base session.

Select the primary injectors being used in the Primary Injector Flow Wizard. The stock EVO 9 injectors are selected in the base session, for use with the OEM injector resistors.

* With the Infinity-6 EMS, users can elect to remove and bypass the OEM resistor pack for more precise control of low-impedance injectors. The resistor pack does NOT have to be modified or bypassed with the OEM injectors. However, if high impedance injectors will be used, the resistor pack MUST be removed. ****Note: High impedance (saturated, high-z) fuel injectors MUST be used with the Infinity-8h.** Refer to Fuel Injector section above.

Basic Sensors

Set the basic sensors. The stock EVO 9 coolant temp sensor is set in the base session. The base session is configured to use an AEM 3.5Bar MAP sensor and AEM IAT sensor. If using different or additional sensors, select the appropriate settings.
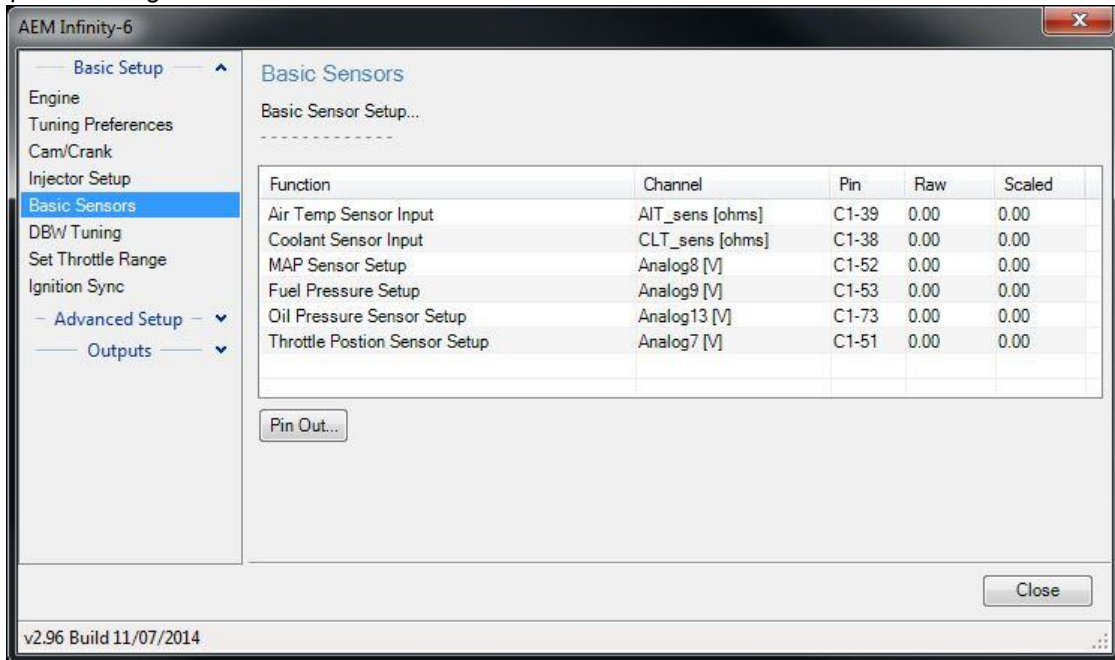
Set Throttle Range

Follow the Wizard instructions to set the throttle range.
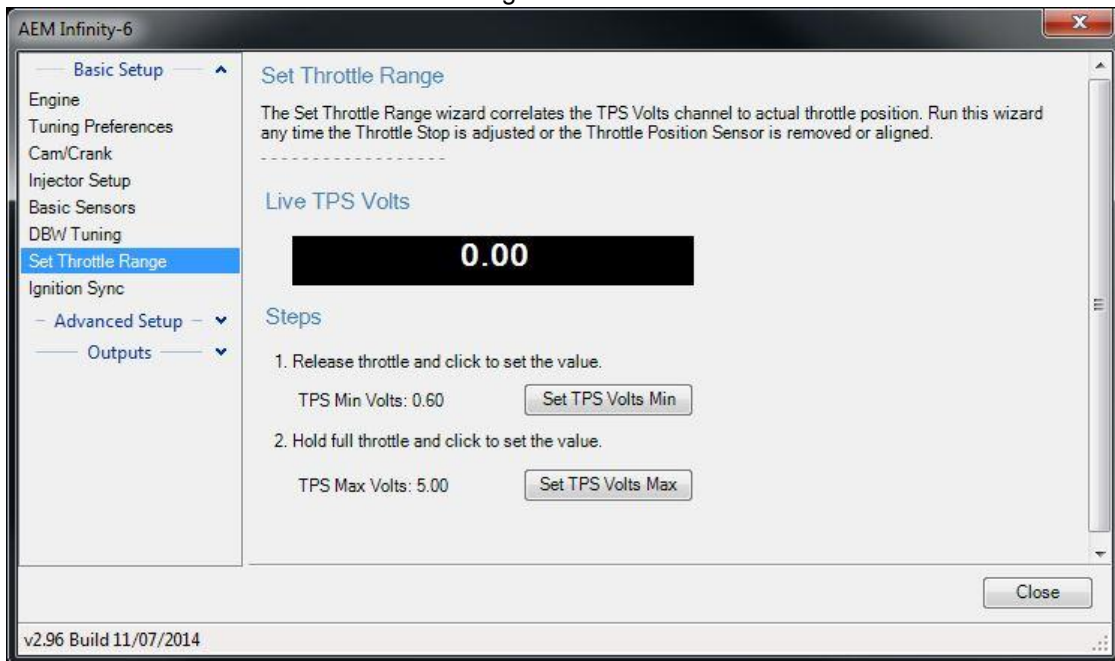
Variable Valve Control (VVC)

The VVC1 settings (intake cam) will be correctly configured for the EVO 9 in the supplied base session. The corresponding Lowside output (LS3) has also been pre-configured in the base session for appropriate duty and frequency. The value for "Cam 1 Sync [deg]" may need to be adjusted once the engine is running to sync the intake cam angle when at rest.

Ignition Sync

Proper ignition sync ensures that the commanded timing in the software is actually the ignition timing value delivered to the engine. For example, when commanding 10° of timing advance in the software, there should be 10° of timing advance at the engine when checked with a timing light. The ignition sync has already been set in the EVO 9 base session and should not require adjustment, however, it is always good practice to verify proper ignition sync.

The 4G63 engine has its ignition timing checked on the crank pulley. Locate the timing marks on the plastic timing belt cover.

The correct way to trigger a timing light is to put the inductive pickup on a high voltage secondary ignition wire. On the EVO 9 stock wasted spark ignition, place the inductive pickup on the cylinder #1 spark plug lead. On a coil-on-plug arrangement, this means removing coil #1 from its well and using a spark plug wire between the coil and the spark plug. Do not attempt to trigger the timing light off of the low voltage trigger wires going into the coil. Doing so may cause incorrect readings with the timing light which may ultimately result in an incorrect ignition sync adjustment.

Once the Setup Wizard has been completed, the engine can be started and idled. In the Setup Wizard, go to the Ignition Sync Wizard. Lock the timing at a value that can be easily verified. If using a non-dial back timing light, lock the timing at 0°; if using a dial back timing light, set the timing to a value that will allow the engine to idle easily (10° or 15°, etc) and set the dial back to the same amount. Check that the timing mark on the crank pulley lines up with the scale on the timing belt cover. If the indicated timing is off from the pointer, use the Advance or Retard Timing buttons in the Setup Wizard until the ignition sync is correct. Unlock the timing once the ignition sync has been verified.

**Important Note: Do not use a dial back timing light on the EVO 9's stock wasted spark ignition to sync timing. Because the plug fires twice as often, the dial back feature of the timing light will give a false reading. Always sync a wasted spark ignition engine at 0° of timing advance.

Pinout

			Infinity-6/8H, P/N 30-7106/7108		
Infinity Pin	**Hardware Reference**	**EVO 9 Function**	**EVO 9 Pin Destination**	**Hardware Specification**	**Notes**
C1-1	LowsideSwitch_4	Fan Control Module	18	Lowside switch, 1.7A max, NO internal flyback diode. 12v pullup.	Configured in Base Session for EVO 9 variable speed fan controller. May be setup for conventional on/off radiator fan function via Setup Wizard.
C1-2	LowsideSwitch_5	Tachomoeter	45	Lowside switch, 6A max with internal flyback diode. Inductive load should NOT have full time power. 12v pullup.	Configured in Base Session for EVO 9 tachometer.
C1-3	LowsideSwitch_6 (Infinity-6 Only)	A/C Compressor Clutch	20	Lowside switch, 6A max with internal flyback diode. Inductive load should NOT have full time power. No pullup.	Configured in Base Session for A/C Compressor Clutch control.
C1-3	Injector 7 (Infinity-8h Only)	Not used	No connect	For use with high impedance (10-15ohms) injectors only, 1.7A max.	Not used.
C1-4	LowsideSwitch_7 (Infinity-6 Only)	Malfunction Indicator Light	22	Lowside switch, 6A max, NO internal flyback diode. No pullup.	Configured in Base Session for Malfucntion Indicator Light (MIL) control.
C1-4	Injector 8 (Infinity-8h Only)	Not used	No connect	For use with high impedance (10-15ohms) injectors only, 1.7A max.	Not used.
C1-5	UEGO 1 Heat	UEGO 1 Heat	No connect		
C1-6	UEGO 1 IA	UEGO 1 IA	No connect		Terminated at 6 pin "Lambda" connector for connecting a UEGO wideband Bosch LSU4.2 sensor (AEM 30-2001). The UEGO extension harness (AEM 30-3600) mates the adapter harness to the sensor.
C1-7	UEGO 1 IP	UEGO 1 IP	No connect	Bosch UEGO controller	
C1-8	UEGO 1 UN	UEGO 1 UN	No connect		
C1-9	UEGO 1 VM	UEGO 1 VM	No connect		
C1-10	Batt Perm Power	Permanent Power	60	Dedicated power management CPU	Full time battery power. MUST be powered before the ignition switch input is triggered (See C1-48).
C1-11	Coil 4	Coil 4	Aux-9	25 mA max source current	Coil 4 for use if converting to sequential ignition.
C1-12	Coil 3	Coil 3	Aux-11	25 mA max source current	Coil 3 for use if converting to sequential ignition.
C1-13	Coil 2	Coil 2	12	25 mA max source current	Triggers factory wasted spark "smart" coils with 5v falling edge trigger. Cylinders 2 & 3.
C1-14	Coil 1	Coil 1	11	25 mA max source current	Triggers factory wasted spark "smart" coils with 5v falling edge trigger. Cylinders 1 & 4.
C1-15	Coil 6	Not used	No connect	25 mA max source current	Not used
C1-16	Coil 5	Not used	No connect	25 mA max source current	Not used
C1-17	Crank Position Sensor VR+	Crank Position Sensor VR+	No connect	Differential Variable Reluctance Zero Cross Detection	Not used.
C1-18	Crank Position Sensor VR-	Crank Position Sensor VR-	No connect		
C1-19	Cam Position Sensor 1 VR-	Cam Position Sensor 1 VR-	No connect	Differential Variable Reluctance Zero Cross Detection	Not used.
C1-20	Cam Position Sensor 1 VR+	Cam Position Sensor 1 VR+	No connect		
C1-21	LowsideSwitch_2	A/C Condensor Fan Relay	30	Lowside switch, 1.7A max, NO internal flyback diode. No pullup.	Configured in Base Session for EVO 9 condenser fan. May be adjusted under Coolant Fan 2 options in Setup Wizard.
C1-22	LowsideSwitch_3	Intake Cam MIVEC	32	Lowside switch, 6A max with internal flyback diode. Inductive load should NOT have full time power. No pullup.	Configured for MIVEC control in base session. See full Infinity instruction manual for more information.
C1-23	AGND	Sensor Ground	34	Dedicated analog ground	Sensor ground for 0-5v analog inputs.
C1-24	AGND	Sensor Ground	49	Dedicated analog ground	Sensor ground for 0-5v analog inputs.

C1-25	Crank Position Sensor 1 Hall	Crank Position Sensor	43	10K pullup to 12V. Will work with ground or floating switches. Frequency input only.	See Setup Wizard Cam/Crank page for options.
C1-26	Cam Position Sensor 1 Hall	Exh Cam Position Sensor	50	10K pullup to 12V. Will work with ground or floating switches. Frequency input only.	See Setup Wizard Cam/Crank page for options.
C1-27	Cam Position Sensor 2 Hall	Int Cam Position Sensor	53	10K pullup to 12V. Will work with ground or floating switches. Frequency input only.	See Setup Wizard Cam/Crank page for options.
C1-28	Digital_In_3	Spare Frequency Input	Aux-6	10K pullup to 12V. Will work with ground or floating switches. Frequency input only.	Can be used for Flex Fuel or Turbo Speed or other frequency input. See Setup Wizard to configure input.
C1-29	Digital_In_4	Vehicle Speed Input	80	10K pullup to 12V. Will work with ground or floating switches. Frequency input only.	See Setup Wizard Input Function Assignments page to configure vehicle speed.
C1-30	Digital_In_5	A/C Switch	83 with 1K pulldown resistor	10K pullup to 12V. Will work with ground or floating switches. Switch input only.	Configured in base session for A/C Switch input.
C1-31	Digital_In_6	Spare Frequency Input	61	10K pullup to 12V. Will work with ground or floating switches. Frequency input only.	Can be used for log OEM MAF signal or other spare frequency input.
C1-31	Coil 7 (Infinity-8h Only)	Not used	Not used	25 mA max source current	Not used. Spare Frequency input lost if using Infinity-8h. **MUST** remove pin from Infinity 80 pin connector.
C1-32	Digital_In_7	Clutch Switch	88	10K pullup to 12V. Will work with ground or floating switches. Switch input only.	Configured in base session to activate Clutch Switch. See Setup Wizard page for options.
C1-32	Coil 8 (Infinity-8h Only)	Not used	Not used	25 mA max source current	Not used. Idle A/C Offset function lost if using Infinity-8h. **MUST** remove pin from Infinity 80 pin connector.
C1-33	Power Ground	Ground	AEMnet Ground	Power ground	Four pin DTM connector in AEM adapter harness. Contact AEM for additional information.
C1-34	CAN A-	AEMNet CAN-	AEMNet	Dedicated high speed CAN transceiver	Four pin DTM connector in AEM adapter harness. Contact AEM for additional information.
C1-35	CAN A+	AEMNet CAN+	AEMNet	Dedicated high speed CAN transceiver	Four pin DTM connector in AEM adapter harness. Contact AEM for additional information.
C1-36	CAN B-	Chassis CAN-CAN-	No connect	Dedicated high speed CAN transceiver	Not used.
C1-37	CAN B+	Chassis CAN+	No connect	Dedicated high speed CAN transceiver	Not used.
C1-38	Temp 1	Coolant Temp Sensor	44	2.49k pullup to 5v	See Setup Wizard Coolant Temperature page for options.
C1-39	Temp 2	Air Temp Sensor	62 or Aux-7	2.49k pullup to 5v	See Setup Wizard Air Temperature page for options.
C1-40	Temp 3	Spare Temp Input	Aux 2	2.49k pullup to 5v	Can be used for Oil Temperature input. See Setup Wizard Oil Temperature page.
C1-41	LowsideSwitch_0	Fuel Pump	21	Lowside switch, 4A max, NO internal flyback diode. No pullup.	Switched ground. Will prime for 2 seconds at key on and activate if RPM > 0.
C1-42	LowsideSwitch_1	Boost Control	41	Lowside switch, 4A max with internal flyback diode. Inductive load should NOT have full time power. No pullup.	See Setup Wizard Boost Control page for options. Monitor BoostControl [%] channel for output state. Base session configured to drive stock boost control solenoid.
C1-43	Power Ground	Ground	58	Power ground	Power ground.
C1-44	Knock Sensor 1	Knock Sensor 1	91	Dedicated knock signal processor	See Setup Wizard Knock Setup page for options.
C1-45	Knock Sensor 2	Not used	No connect.	Dedicated knock signal processor	Not used.
C1-46	Power Ground	Ground	75	Power ground	Power ground.
C1-47	Main Relay Control	Ground out to main relay	57	0.7A max ground sink for external relay control	Will activate at key on and at key off according to the configuration settings.
C1-48	Ign Switch	Ignition Switch	99	10k pulldown	Full time battery power must be available at C1-10 before this input is triggered.
C1-49	+5V_Out	+5V Sensor Power	42	Regulated, fused +5V supply for sensor power	Analog sensor power.

C1-50	+5V_Out	+5V Sensor Power	Aux-4	Regulated, fused +5V supply for sensor power	Analog sensor power.
C1-51	Analog_In_7	Throttle Position	78	12 bit A/D, 100K pullup to 5V	PnP for TPS input from throttle body.
C1-52	Analog_In_8	Boost/MAP Sensor	92	12 bit A/D, 100K pullup to 5V	MAP input. Must change stock boost sensor for sensor with appropriate range.
C1-53	Analog_In_9	Fuel Pressure	Aux 1	12 bit A/D, 100K pullup to 5V	Can be used as a Fuel Pressure input for fuel delivery calculation. See the Setup Wizard Fuel Pressure page for setup and calibration. Monitor the FuelPressure [psig] channel.
C1-54	VR+_In_2	Not used	No connect	Differential Variable Reluctance Zero Cross Detection	Not used.
C1-55	VR-_In_2	Not used	No connect		
C1-56	VR-_In_3	Not used	No connect	Differential Variable Reluctance Zero Cross Detection	Not used.
C1-57	VR+_In_3	Not used	No connect		
C1-58	HighsideSwitch_0	Not used	No connect	2.6A max, High Side Solid State Relay	Not used.
C1-59	Stepper_1B	Idle 1B	28	Automotive, Programmable Stepper Driver, up to 28V and ±1.4A	Stepper Idle Control.
C1-60	Stepper_2B	Idle 2B	29	Automotive, Programmable Stepper Driver, up to 28V and ±1.4A	Stepper Idle Control.
C1-61	DBW1 Motor-	Not used	No connect	5.0A max Throttle Control Hbridge Drive	Not used
C1-62	DBW1 Motor+	Not used	No connect	5.0A max Throttle Control Hbridge Drive	Not used
C1-63	+12v	+12v	Aux-8	12v power from main relay	12v power from main relay.
C1-64	Injector 6	Not used	No connect	Peak and hold, 3A max for Infinity-6. Saturated injector driver for Infinity-8h.	Not used.
C1-65	Injector 5	Not used	No connect	Peak and hold, 3A max for Infinity-6. Saturated injector driver for Infinity-8h.	Not used.
C1-66	Injector 4	Injector 4	2	Peak and hold, 3A max for Infinity-6. Saturated injector driver for Infinity-8h.	Injector 4.
C1-67	Power Ground	Ground	46	Power ground	Power ground.
C1-68	+12v	+12v	47	12v power from main relay	12v power from main relay.
C1-69	Analog_In_19	Not used	No connect	12 bit A/D, 100K pullup to 5V	Not used
C1-70	Analog_In_18	Not used	No connect	12 bit A/D, 100K pullup to 5V	Not used
C1-71	Analog_In_16	Spare Analog Input	Aux-10	12 bit A/D, 100K pullup to 5V	Can be used as Charge Pressure, Mode Switch, Lambda3 or other analog input. See Input Function Assignments in Setup Wizard.
C1-72	Flash Enable	Flash Enable	Flash Enable Connector	10k pulldown	Two pin connector in AEM adapter harness. Use only to force EMS into flash mode if normal firmware update procedure does not work.
C1-73	Analog_In_13	Spare Analog Input	Aux 5	12 bit A/D, 100K pullup to 5V	Can be used as Oil Pressure, Mode Switch, 3-Step or other analog input. See Oil Pressure or Input Function Assignments in Setup Wizard.
C1-74	Analog_In_11	Spare Analog Input	Aux 12	12 bit A/D, 100K pullup to 5V	Can be used as ShiftSwitch, Mode Switch, 3-Step or other analog input. See Shift Cut or Input Function Assignments in Setup Wizard.
C1-75	Analog_In_10	Baro	51	12 bit A/D, 100K pullup to 5V	PnP for Barometric Pressure.
C1-76	Injector 3	Injector 3	24	Peak and hold, 3A max for Infinity-6. Saturated injector driver for Infinity-8h.	Injector 3.

C1-77	Injector 2	Injector 2	9	Peak and hold, 3A max for Infinity-6. Saturated injector driver for Infinity-8h.	Injector 2.
C1-78	Injector 1	Injector 1	1	Peak and hold, 3A max for Infinity-6. Saturated injector driver for Infinity-8h.	Injector 1.
C1-79	Stepper_2A	Idle 2A	15	Automotive, Programmable Stepper Driver, up to 28V and ±1.4A	Stepper Idle Control.
C1-80	Stepper_1A	Idle 1A	14	Automotive, Programmable Stepper Driver, up to 28V and ±1.4A	Stepper Idle Control.

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Please note that before AEM can issue an RMA for any electronic product, it is first necessary for the installer or end user to contact the EMS tech line at 1-800-423-0046 to discuss the problem. Most issues can be resolved over the phone. Under no circumstances should a system be returned or a RMA requested before the above process transpires.

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Any AEM electronics product can be returned for repair if it is out of the warranty period. There is a minimum charge of $50.00 for inspection and diagnosis of AEM electronic parts. Parts used in the repair of AEM electronic components will be extra. AEM will provide an estimate of repairs and receive written or electronic authorization before repairs are made to the product.