Instruction Manual

AEM
PERFORMANCE ELECTRONICS

Infinity Supported Application
2008–2010 Dodge Viper 4G

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.)

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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 AEM Infinity EMS can be adapted to most fuel injected engines. When possible, AEM will provide "base cal" sessions and configuration files for supported applications that have been verified by AEM engineers. These session and configuration files are starting points only and will need to be modified for your specific application. This manual lists the files available and suggested changes for your engine. It also includes a pinout with suggestions for adapting the Infinity ECU to your engine harness. It is the responsibility of the installer to verify this information before starting the engine.

MODELS

Dodge
2008–2010 Viper with 8.4L V10 engine

DOWNLOADABLE FILES

Files can be downloaded from www.aeminfinity.com. An experienced tuner must be available to configure and manipulate the data before driving can commence. The Quick Start Guide and Full Manual describe the steps for logging in and registering at www.aeminfinity.com. These documents are available for download in the Support section of the AEM Electronics website: http://www.aemelectronics.com/products/support/instructions.

ADAPTER HARNESS OPTIONS

30-3701 Plug & Pin Kit
This kit includes mating connectors and terminals for the Infinity. It also includes a main relay kit which is necessary for proper power distribution. This kit is best suited for experienced installers who want to build their own harness.

30-3702 Harness with Flying Leads
This harness includes a fused power distribution center with main relay. Pre-terminated connectors are available for the internal UEGO sensors and AEMNet. A bag of multi-color flying leads is included to simplify custom harness builds.

30-3703 Mini Harness with Pins
This harness includes a fused power distribution center with main relay. Pre-terminated connectors are available for the internal UEGO sensors and AEMNet. 100 pins and 30 sealing plugs are included.

30-3600 02 Sensor Extension Harness
Extension harness to connect AEM UEGO Wideband 02 sensor to 6-pin Deutsch DTM in Infinity Mini Harnesses (30-3702/3703).

30-3601 IP67 Comms Cable
USB Mini-B comms cable; 39" long with right angled connector and bayonet style lock.

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

30-2981 ECU Patch/Extension Harness
Extension harness to connect the factory wiring harness to the factory PCB.

IMPORTANT APPLICATION NOTES

The test vehicle used for development of this app was a 2010 Viper ACR with ACR-X headers and a deleted A/C system. Due to a lack of the A/C system and its components, operation of this system was not verified on the Infinity EMS.

The coils used for testing were "stock" two-wire ignition coils (PN 1-05037127AB). For compatibility with the Infinity EMS the use of an igniter or CDI that accepts a FALLING edge fire signal is necessary. For vehicle development three AEM 4 Channel Coil Drivers (PN 30-2840) were used.

The 2008–2010 Dodge Viper uses the Push-Button as an input into the Factory ECU to control ground for the Starter Relay. An external circuit is utilized to control the Push-Button Start to Starter Relay interaction. A schematic to build this device is provided in this document. Note if this schematic is followed the Starter Motor will continue to spin while the Push-Button Start is being held. Continued use of the Starter Motor once engine is no longer within the cranking RPM range may cause damage to the Starter Motor, and Engine.

The 2008–2010 Dodge Viper uses a 12 Volt pulse-width modulated signal through the Generator Field Control wire to control the Generator output. An external circuit is required to provide this signal as the Infinity is not outfitted with hardware to support this function. A schematic to build this device is provided in this document.

Caution must be used when tuning Drive By Wire (DBW) values for this application. While creating the Infinity base session, it was observed that aggressive DBW values may cause the throttle plate to wedge between the throttle body housing when closing resulting in a DBW_Error_Fatal.

The stock CLT, IAT, MAP, Injectors, Oil Temperature, Oil Pressure sensors have been fully characterized and their calibrations have been inputted into the base session.

The adapter harness used to mate the Infinity EMS to the stock wiring harness was setup to use the stock main relay that is already on the vehicle. The stock Oil Pressure, Oil Temperature, Coolant Temperature, Battery Voltage, Speedometer, and RPM gauges are not supported by the Infinity EMS.
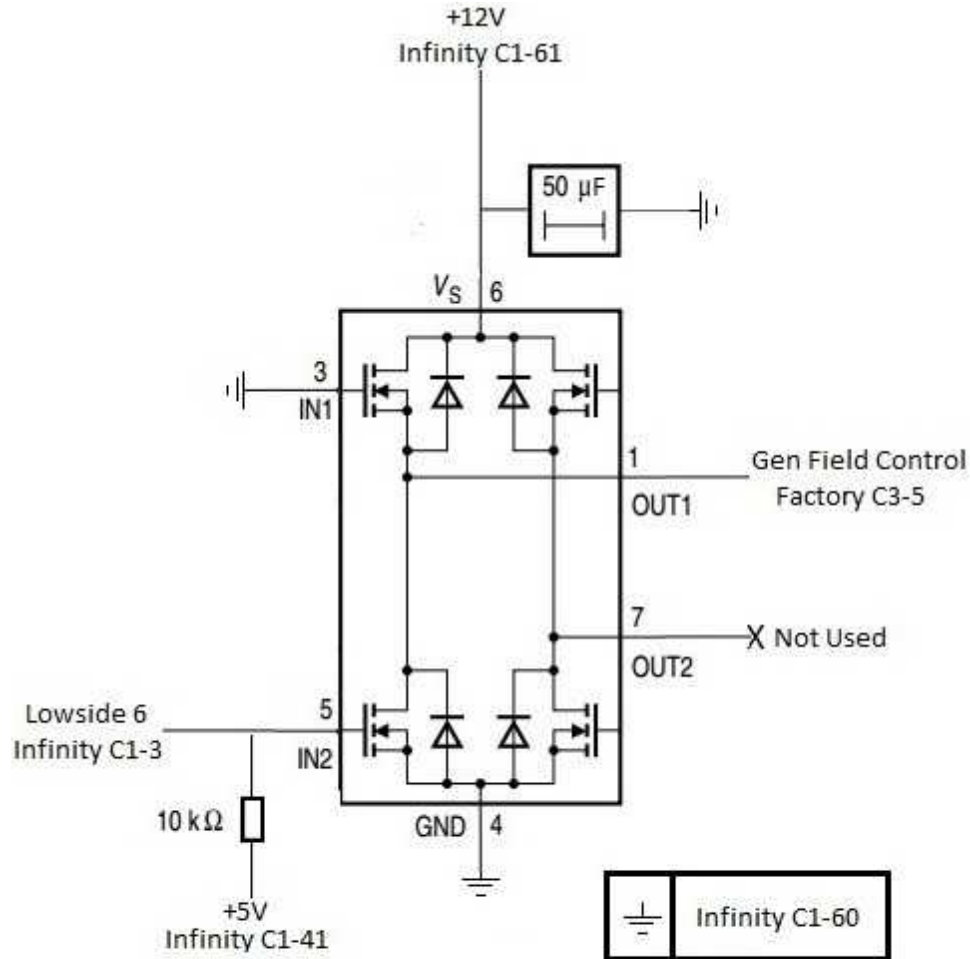
PUSH BUTTON START – STARTER RELAY

Use the following schematic to create a Starter Relay circuit. This circuit will need to be wired into the Infinity adapter harness.

V23374-A1601-X008 Relay
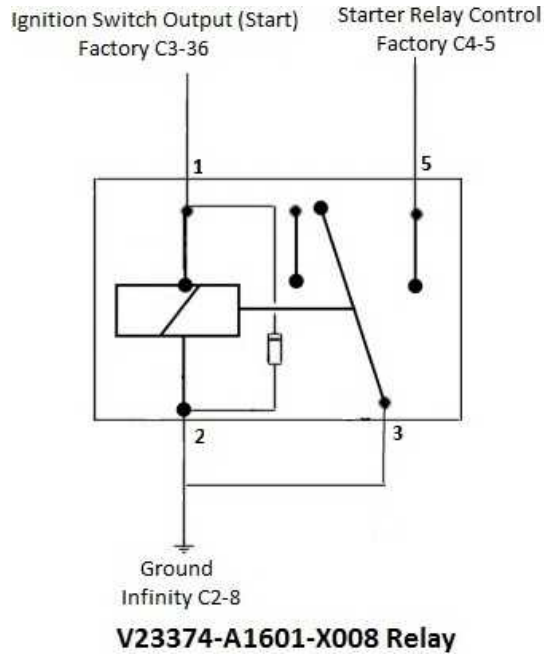
GENERATOR CONTROL

Use the following schematic to create a Generator control circuit. This circuit will need to be wired into the Infinity adapter harness.

TLE 5205-2G H-Bridge

GETTING STARTED

Refer to the **10-7100 for EMS 30-7100 Infinity Quick Start Guide** for additional information on getting the engine started with the Infinity EMS

Import Base Session

2008–2010 Dodge Viper base session located in C:\Documents\AEM\Infinity Tuner\Sessions\Base Sessions

IMPORTANT APPLICATION SPECIFIC SETTINGS

Infinity Tuner Wizard Setup

Engine

In the Wizard Engine tab confirm the following settings:

Engine Displacement (L) = *8.40*
Number of Cylinders = 10
Engine Cycle Type = 4 Stroke
Ignition Type = Sequential (Coil On Plug)
Firing Order = 1-10-9-4-3-6-5-8-7-2 Viper Odd Fire

Note: Throttle [%] was used for VE Table Load Axis Selection to create base session.

Cam/Crank

In the Wizard Cam/Crank tab confirm the following setting:

Dodge Viper V10 (2008–2010)

Ignition Sync

Add a text grid control to your layout and select the following channels. Make sure their values match the settings below for initial timing sync.

TrigOffset [degBTDC] = 4.50

CamSyncAdjustment = 100.00

See QuickStart Guide section **Setup: Ignition Sync** for instructions on timing sync.

Injector Setup

In the Wizard Injector Setup tab confirm the following setting:

Number of Injectors = 10

Idle

In the Wizard Idle tab confirm the following settings:

Idle Stepper Max Steps = 33
Idle Airflow Invert = Unchecked

DBW Tuning

1) Run Drive By Wire Wizard Setup.

2) Enter in "Upper" values of DBW_Bias [%] 1d Table. Enter values for DBW_FB_Multiplier.

Note: Caution must be taken when tuning Drive By Wire values.

LowSide Assignment – Coolant Fans

In the Wizard LowSide Assignment tab confirm the following settings:

LS2 Setup:
- *Frequency* = 30 Hz
- *LS2_Duty X-Axis* = Engine Speed [RPM]
- *LS2_Duty Y-Axis* = CoolantFan1On

LS8 Setup:
- *Frequency* = 30 Hz
- *LS8_Duty X-Axis* = Engine Speed [RPM]
- *LS8_Duty Y-Axis* = CoolantFan2On

LowSide Assignment – VVC

In the VVC Wizard tab confirm the following settings:

VVC2A Enable = Checked

Cam 0 Sync = 95

Under "VVC2 Options" confirm the following settings:

VVC2 Failsafe Min	= -55
VVC2 Failsafe Max	= 5
VVC2 Feedback Min	= -30
VVC2 Feedback Max	= 30
VVC2 Duty Min	= 0
VVC2 Duty Max	= 90
VVC2 Proportional Gain	= 0.950
VVC2 Integral Gain	= 2.500
VVC2 Derivative Gain	= 0.050

In the Lowside Assignment Tables tab, configure LS5 as shown below:

Frequency	= 250 Hz
LS5_Duty X-Axis	= Engine Speed [RPM]
LS5_Duty Y-Axis	= VVC2A_Duty [%]

Add a 2D table to the Infinity Tuner layout called "LS5_Duty [%] and configure it exactly as shown below.

LowSide Assignment – Generator Control

In the Lowside Assignment Tables tab, confirm the following settings:

Frequency = 125 Hz
LS6_Duty X-Axis = Engine Speed [RPM]
LS6_Duty Y-Axis = Battery [Volts]

LowSide Assignment – Reverse Lock-Out

In the Lowside Assignment Tables tab, confirm the following settings:

Frequency = 30 Hz
LS7_Duty X-Axis = Vehicle Speed [MPH]
LS7_Duty Y-Axis = Engine Speed [RPM]

Input Function Assignment

In the Input Function Assignment tab, choose Vehicle Speed Input and confirm the following setting:

Vehicle Speed Calibration = 0.44

PINOUTS

Infinity Pinout

Dedicated		Dedicated and not reconfigurable
Assigned		Assigned but reconfigurable
Available		Available for user setup
Not Applicable		Not used in this configuration
Required		Required for proper function

Infinity Pin	Hardware Reference	08–10 Dodge Viper Function	08–10 Dodge Viper Pin Destination	Hardware Specification	Notes
	External Hbridge	Output of Generator Control H-Bridge	C3-5		Pin 1 of TLE 5205-2G Hbridge
	External Relay	Ignition Switch Output (Start)	C3-36		Pin 1 of V23374-A1601-X008 Relay
	External Relay	Starter Relay Control	C4-5		Pin 2 of V23374-A1601-X008 Relay
C1-1	LowsideSwitch_4	A/C Relay Control		Lowside switch, 4A max, NO internal fly back diode.	See "LowSide Assignment Tables" for output assignment.
C1-2	LowsideSwitch_5	LS5	C3-12	Lowside switch, 4A max with internal fly back diode. Inductive load should NOT have full time power.	See Setup Wizard Page "LowSide Assignment Tables" for output assignment and 2D table "LS5_Duty [%]" for activation.
C1-3	LowsideSwitch_6	LS6	Gen Hbridge control (Pin 5 of TLE 5205-2G Hbridge)	Lowside switch, 4A max with internal fly back diode. Inductive load should NOT have full time power.	See Setup Wizard Page "LowSide Assignment Tables" for output assignment and 2D table "LS6_Duty [%]" for activation.
C1-4	UEGO 1 Heat	UEGO 1 Heat		Bosch UEGO controller	Lowside switch for UEGO heater control. Connect to pin 4 of Bosch UEGO sensor. NOTE that pin 3 of the Sensor is heater (+) and must be power by a fused/switched 12V supply.
C1-5	UEGO 1 IA	UEGO 1 IA			Trim Current signal. Connect to pin 2 of Bosch UEGO sensor.

Infinity Pin	Hardware Reference	08–10 Dodge Viper Function	08–10 Dodge Viper Pin Destination	Hardware Specification	Notes
C1-6	UEGO 1 IP	UEGO 1 IP			Pumping Current signal. Connect to pin 6 of Bosch UEGO sensor.
C1-7	UEGO 1 UN	UEGO 1 UN			Nernst Voltage signal. Connect to pin 1 of Bosch UEGO sensor.
C1-8	UEGO 1 VM	UEGO 1 VM			Virtual Ground signal. Connect to pin 5 of Bosch UEGO sensor.
C1-9	Flash_Enable	Flash Enable		10K pulldown	Not usually needed for automatic firmware updates through Infinity Tuner. If connection errors occur during update, connect 12 volts to this pin before proceeding with upgrade. Disconnect the 12 volts signal after the update.
C1-10	+12V_R8C_CPU	Battery Perm Power	C3-21	Dedicated power management CPU	Full time battery power. MUST be powered before the ignition switch input is triggered. (See C1-65.)
C1-11	Coil 4	Coil 4	C2-9	25 mA max source current	0–5V Falling edge fire. DO NOT connect directly to coil primary. Must use an ignitor OR CDI that accepts a FALLING edge fire signal.
C1-12	Coil 3	Coil 3	C1-8	25 mA max source current	0–5V Falling edge fire. DO NOT connect directly to coil primary. Must use an ignitor OR CDI that accepts a FALLING edge fire signal.
C1-13	Coil 2	Coil 2	C2-10	25 mA max source current	0–5V Falling edge fire. DO NOT connect directly to coil primary. Must use an ignitor OR CDI that accepts a FALLING edge fire signal.
C1-14	Coil 1	Coil 1	C2-1	25 mA max source current	0–5V Falling edge fire. DO NOT connect directly to coil primary. Must use an ignitor OR CDI that accepts a FALLING edge fire signal.
C1-15	Coil 6	Coil 6	C2-7	25 mA max source current	0–5V Falling edge fire. DO NOT connect directly to coil primary. Must use an ignitor OR CDI that accepts a FALLING edge fire signal.
C1-16	Coil 5	Coil 5	C1-3	25 mA max source current	0–5V Falling edge fire. DO NOT connect directly to coil primary. Must use an ignitor OR CDI that accepts a FALLING edge fire signal.
C1-17	LowsideSwitch_2	RAD Fan Low Relay Control	C4-2	Lowside switch, 4A max, NO internal flyback diode.	See "LowSide Assignment Tables" for output assignment.

Infinity Pin	Hardware Reference	08–10 Dodge Viper Function	08–10 Dodge Viper Pin Destination	Hardware Specification	Notes
C1-18	LowsideSwitch_3	MIL Output		Lowside switch, 4A max with internal flyback diode. Inductive load should NOT have full time power.	See Wizard page "LowSide Assignment Tables" for output assignment. MIL Activates when any of the following flags are true: ErrorAirTemp, ErrorBaro, ErrorCoolantTemp, ErrorEBP, ErrorFuelPressure, UEGO_0_Diag_error, UEGO_1_Diag_error, ErrorMAFAnalog, ErrorMAFDigital, ErrorMAP, ErrorOilPressure, ErrorThrottle.
C1-19	AGND_1	Sensor Ground	C1-17 / C1-23	Dedicated analog ground	Analog 0–5V sensor ground
C1-20	AGND_1	Sensor Ground	C1-18	Dedicated analog ground	Analog 0–5V sensor ground
C1-21	Crankshaft Position Sensor Hall	Crankshaft Position Sensor Hall	C1-25	10K pullup to 12V. Will work with ground or floating switches.	See Setup Wizard page Cam/Crank for options.
C1-22	Camshaft Position Sensor 1 Hall	Camshaft Position Sensor 1 Hall	C1-22	10K pullup to 12V. Will work with ground or floating switches.	See Setup Wizard page Cam/Crank for options.
C1-23	Digital_In_2	Camshaft Position Sensor 2 Hall		10K pullup to 12V. Will work with ground or floating switches.	See Setup Wizard page Cam/Crank for options.
C1-24	Digital_In_3	Turbo Speed Hz		10K pullup to 12V. Will work with ground or floating switches.	See Setup Wizard page Input Function Assignment for calibration constant. TurboSpeed [RPM] = Turbo [Hz] * Turbo Speed Calibration.
C1-25	Digital_In_4	Vehicle Speed Sensor	C4-29	10K pullup to 12V. Will work with ground or floating switches.	See Setup Wizard page Input Function Assignment for calibration constant.
C1-26	Digital_In_5	Flex Fuel		10K pullup to 12V. Will work with ground or floating switches.	See channel FlexDigitalIn [Hz] for raw frequency input data.
C1-27	Knock Sensor 1	Knock Sensor 1	C3-34	Dedicated knock signal processor	See Setup Wizard page Knock Setup for options.
C1-28	Knock Sensor 2	Knock Sensor 2	C3-26	Dedicated knock signal processor	See Setup Wizard page Knock Setup for options.
C1-29	+12V_Relay_Control	+12V Relay Control	C3-19 / C2-17	0.7A max ground sink for external relay control	Will activate at key on and at key off according to the configuration settings.
C1-30	Power Ground	Ground	C3-27	Power Ground	Connect directly to battery ground.
C1-31	CANL_Aout	AEMNet CANL		Dedicated High Speed CAN Transceiver	Recommend twisted pair (one twist per 2") with terminating resistor. Contact AEM for additional information.

Infinity Pin	Hardware Reference	08–10 Dodge Viper Function	08–10 Dodge Viper Pin Destination	Hardware Specification	Notes
C1-32	CANH_Aout	AEMNet CANH		Dedicated High Speed CAN Transceiver	Recommend twisted pair (one twist per 2") with terminating resistor. Contact AEM for additional information.
C1-33	LowsideSwitch_1	Boost Control		Lowside switch, 4A max with internal flyback diode. Inductive load should NOT have full time power.	See Setup Wizard page Boost Control for options. Monitor BoostControl [%] channel for output state.
C1-34	Lowside Fuel Pump drive	Fuel Pump	C4-4	Lowside switch, 4A max, NO internal flyback diode.	Switched ground. Will prime for 2 seconds at key on and activate if RPM > 0.
C1-35	Analog_In_7	Throttle Position Sensor	C2-23	12 bit A/D, 100K pullup to 5V	0–5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU. See the Setup Wizard Set Throttle Range page for automatic min/max calibration. Monitor the Throttle [%] channel. Also DB1_TPSA [%] for DBW applications.
C1-36	Analog_In_8	MAP Sensor	C1-33	12 bit A/D, 100K pullup to 5V	0–5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU. See the Setup Wizard Set Manifold Pressure page for setup and calibration. Monitor the MAP [kPa] channel.
C1-37	Analog_In_9	Fuel Pressure		12 bit A/D, 100K pullup to 5V	0–5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU. See the Setup Wizard Fuel Pressure page for setup and calibration. Monitor the FuelPressure [psig] channel.
C1-38	Analog_In_10	Baro Sensor		12 bit A/D, 100K pullup to 5V	0–5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU. See the Setup Wizard Barometric Pressure page for setup and calibration. Monitor the BaroPress [kPa] channel.
C1-39	Analog_In_11	Shift Switch Input		12 bit A/D, 100K pullup to 5V	0–5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU. See the 1D lookup table 'ShiftSwitch' for setup. Also assignable to multiple functions. See Setup Wizard for details.

Infinity Pin	Hardware Reference	08–10 Dodge Viper Function	08–10 Dodge Viper Pin Destination	Hardware Specification	Notes
C1-40	Analog_In_12	Mode Switch		12 bit A/D, 100K pullup to 5V	0–5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU. See the 1D lookup table 'ModeSwitch' for input state. A multi-position rotary switch such as AEM P/N 30-2056 is recommended. Also assignable to multiple functions. See Setup Wizard for details.
C1-41	+5V_Out_1	+5V Out	C1-27 / +5V of TLE 5205-2G Hbridge	Regulated, fused +5V supply for sensor power	Analog sensor power
C1-42	+5V_Out_1	+5V Out	C2-29	Regulated, fused +5V supply for sensor power	Analog sensor power
C1-43	HighsideSwitch_1	HS1 (switched 12V)		0.7A max, High Side Solid State Relay	See Setup Wizard page 'HighSide Assigment Tables' for configuration options. See 2D lookup table 'HS1_Table' for activation settings.
C1-44	HighsideSwitch_0	VTEC		0.7A max, High Side Solid State Relay	See Setup Wizard page 'HighSide Assigment Tables' for configuration options. See 2D lookup table 'HS0_Table' for activation settings. See Setup Wizard page 'VTEC' for default activation criteria.
C1-45	Crankshaft Position Sensor VR+	Crankshaft Position Sensor VR+		Differential Variable Reluctance Zero Cross Detection	See Setup Wizard page Cam/Crank for options.
C1-46	Crankshaft Position Sensor VR-	Crankshaft Position Sensor VR-			See Setup Wizard page Cam/Crank for options.
C1-47	Camshaft Position Sensor 1 VR-	Camshaft Position Sensor 1 VR-		Differential Variable Reluctance Zero Cross Detection	See Setup Wizard page Cam/Crank for options.
C1-48	Camshaft Position Sensor 1 VR+	Camshaft Position Sensor 1 VR+			See Setup Wizard page Cam/Crank for options.
C1-49	VR+_In_2	Non Driven Left Wheel Speed Sensor +		Differential Variable Reluctance Zero Cross Detection	See Non Driven Wheel Speed Calibration in the Setup Wizard Input Function Assignment page.
C1-50	VR-_In_2	Non Driven Left Wheel Speed Sensor -			
C1-51	VR-_In_3	Driven Left Wheel Speed Sensor -		Differential Variable Reluctance Zero Cross Detection	See Driven Wheel Speed Calibration in the Setup Wizard Input Function Assignment page.

Infinity Pin	Hardware Reference	08–10 Dodge Viper Function	08–10 Dodge Viper Pin Destination	Hardware Specification	Notes
C1-52	VR+_In_3	Driven Left Wheel Speed Sensor +			
C1-53	DBW1 Motor -	DBW Motor Control Close	C2-16	5.0A max Throttle Control Hbridge Drive	+12V to close
C1-54	DBW1 Motor +	DBW Motor Control Open	C2-6	5.0A max Throttle Control Hbridge Drive	+12V to open
C1-55	Power Ground	Ground	C3-29	Power Ground	Connect directly to battery ground.
C1-56	Injector 6	Injector 6	C2-4	Saturated or peak and hold, 3A max continuous	Injector 6
C1-57	Injector 5	Injector 5	C1-6	Saturated or peak and hold, 3A max continuous	Injector 5
C1-58	Injector 4	Injector 4	C2-14	Saturated or peak and hold, 3A max continuous	Injector 4
C1-59	Injector 3	Injector 3	C1-7	Saturated or peak and hold, 3A max continuous	Injector 3
C1-60	Power Ground	Ground	C3-30 / Pins 4, 3, and Capacitor of TLE 5205-2G Hbridge	Power Ground	Connect directly to battery ground.
C1-61	+12V	+12V In	C3-11 / C3-20 / Pin 6 of TLE 5205-2G Hbridge	12 volt power from relay	12 volt power from relay. Relay must be controlled by +12V Relay Control signal, pin C1-29 above.
C1-62	Injector 2	Injector 2	C2-5	Saturated or peak and hold, 3A max continuous	Injector 2
C1-63	Injector 1	Injector 1	C2-11	Saturated or peak and hold, 3A max continuous	Injector 1
C1-64	+12V	+12V In		12 volt power from relay	12 volt power from relay. Relay must be controlled by +12V Relay Control signal pin C1-29 above.
C1-65	+12V_SW	Ignition Switch	C1-12	10K pulldown	Full time battery power must be available at C1-10 before this input is triggered.
C1-66	Analog_In_Temp_1	Coolant Temp Sensor	C3-24	12 bit A/D, 2.49K pullup to 5V	See "Coolant Temperature" Setup Wizard for selection.
C1-67	Analog_In_Temp_2	Intake Air Temperature	C3-1	12 bit A/D, 2.49K pullup to 5V	See "Air Temperature" Setup Wizard for selection.

Infinity Pin	Hardware Reference	08–10 Dodge Viper Function	08–10 Dodge Viper Pin Destination	Hardware Specification	Notes
C1-68	Harness_Analog_In_Temp_3	Oil Temperature Sensor	C3-33	12 bit A/D, 2.49K pullup to 5V	See 1D table OilTempCal table for calibration data and OilTemp [C] for channel data.
C1-69	Stepper_2A	Stepper 2A		Automotive, Programmable Stepper Driver, up to 28V and ±1.4A	Be sure that each internal coil of the stepper motor is properly paired with the 1A/1B and 2A/2B ECU outputs. Supports Bi-Polar stepper motors only.
C1-70	Stepper_1A	Stepper 1A		Automotive, Programmable Stepper Driver, up to 28V and ±1.4A	Be sure that each internal coil of the stepper motor is properly paired with the 1A/1B and 2A/2B ECU outputs. Supports Bi-Polar stepper motors only.
C1-71	Stepper_2B	Stepper 2B		Automotive, Programmable Stepper Driver, up to 28V and ±1.4A	Be sure that each internal coil of the stepper motor is properly paired with the 1A/1B and 2A/2B ECU outputs. Supports Bi-Polar stepper motors only.
C1-72	Stepper_1B	Stepper 1B		Automotive, Programmable Stepper Driver, up to 28V and ±1.4A	Be sure that each internal coil of the stepper motor is properly paired with the 1A/1B and 2A/2B ECU outputs. Supports Bi-Polar stepper motors only.
C1-73	Power Ground	Ground		Power Ground	Connect directly to battery ground.
C2-1	DBW2 Motor +	DBW Motor Control Open	C2-8	5.0A max Throttle Control Hbridge Drive	+12V to open
C2-2	DBW2 Motor -	DBW Motor Control Close	C2-18	5.0A max Throttle Control Hbridge Drive	+12V to close
C2-3	Power Ground	Ground	C3-31	Power Ground	Connect directly to battery ground.
C2-4	Injector 7	Injector 7	C1-5	Saturated or peak and hold, 3A max continuous	Injector 7
C2-5	Injector 8	Injector 8	C2-13	Saturated or peak and hold, 3A max continuous	Injector 8
C2-6	Injector 9	Injector 9	C1-4	Saturated or peak and hold, 3A max continuous	Injector 9
C2-7	Injector 10	Injector 10	C2-12	Saturated or peak and hold, 3A max continuous	Injector 10
C2-8	Power Ground	Ground	Pin 2 & 3 of V23374-A1601-X008 Relay	Power Ground	Connect directly to battery ground.
C2-9	+12V	+12V In	C2-19 / C2-38	12 volt power from relay	12 volt power from relay. Relay must be controlled by +12V Relay Control signal, pin C1-29 above.

| Infinity Pin	Hardware Reference	08–10 Dodge Viper Function	08–10 Dodge Viper Pin Destination	Hardware Specification	Notes
C2-10	Injector 11	Injector 11		Saturated or peak and hold, 3A max continuous	Not used
C2-11	Injector 12	Injector 12		Saturated or peak and hold, 3A max continuous	Not used
C2-12	Analog_In_17	A/C Analog Request		12 bit A/D, 100K pullup to 5V	0–5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU. See Setup Wizard Input Functions page for input selection. See AC_Request_In 1-axis table for activation logic.
C2-13	Analog_In_18	DBW_APP1 [%]	C2-21	12 bit A/D, 100K pullup to 5V	0–5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU.
C2-14	Analog_In_19	DBW_APP2 [%]	C1-32	12 bit A/D, 100K pullup to 5V	0–5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU.
C2-15	Analog_In_Temp_4	Charge Out Temperature		12 bit A/D, 2.49K pullup to 5V	See ChargeOutTemp [C] table for calibration data and ChargeOutTemp [C] for channel data.
C2-16	Analog_In_Temp_5	Airbox Temp / Intake Air Temperature	C1-16	12 bit A/D, 2.49K pullup to 5V	See AirboxTemp [C] table for calibration data and AirboxTemp [C] for channel data.
C2-17	Analog_In_Temp_6	Fuel Temperature		12 bit A/D, 2.49K pullup to 5V	See FuelTemp [C] table for calibration data and FuelTemp [C] for channel data.
C2-18	Analog_In_13	Oil Pressure	C3-23	12 bit A/D, 100K pullup to 5V	0–5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU. See Setup Wizard Oil Pressure page for setup options. See OilPressure [psig] for channel data.
C2-19	Analog_In_14	Traction Control Mode / Sensitivity		12 bit A/D, 100K pullup to 5V	0–5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU. See the TC_SlipTrgtTrim [MPH] 1-axis table. A multi-position rotary switch such as AEM P/N 30-2056 is recommended.

Infinity Pin	Hardware Reference	08–10 Dodge Viper Function	08–10 Dodge Viper Pin Destination	Hardware Specification	Notes
C2-20	Analog_In_15	Exhaust Back Pressure		12 bit A/D, 100K pullup to 5V	0–5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU. See Setup Wizard Exhaust Pressure page for setup options. See EBPress [kPa] for channel data.
C2-21	Analog_In_16	DBW1_TPSB [%]	C2-33	12 bit A/D, 100K pullup to 5V	0–5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU.
C2-22	+5V_Out_2	+5V Out		Regulated, fused +5V supply for sensor power	Analog sensor power
C2-23	+5V_Out_2	+5V Out		Regulated, fused +5V supply for sensor power	Analog sensor power
C2-24	+5V_Out_2	+5V Out		Regulated, fused +5V supply for sensor power	Analog sensor power
C2-25	VR+_In_5	Driven Right Wheel Speed Sensor +		Differential Variable Reluctance Zero Cross Detection	See Driven Wheel Speed Calibration in the Setup Wizard Input Function Assignment page.
C2-26	VR-_In_5	Driven Right Wheel Speed Sensor -			
C2-27	VR-_In_4	Non Driven Right Wheel Speed Sensor -		Differential Variable Reluctance Zero Cross Detection	See Non Driven Wheel Speed Calibration in the Setup Wizard Input Function Assignment page.
C2-28	V R+_In_4	Non Driven Right Wheel Speed Sensor +			
C2-29	LowsideSwitch_9	Tachometer		Lowside switch, 4A max with internal flyback diode, 2.2K 12V pullup. Inductive load should NOT have full time power.	See Setup Wizard page Tacho for configuration options.
C2-30	AGND_2	Sensor Ground	C2-15 / C2-30 / C2-34	Dedicated analog ground	Analog 0–5V sensor ground
C2-31	AGND_2	Sensor Ground	C2-20	Dedicated analog ground	Analog 0–5V sensor ground
C2-32	AGND_2	Sensor Ground	C3-35 / C3-25 / C3-3	Dedicated analog ground	Analog 0–5V sensor ground

Infinity Pin	Hardware Reference	08–10 Dodge Viper Function	08–10 Dodge Viper Pin Destination	Hardware Specification	Notes
C2-33	Analog_In_20	Spare Analog Input		12 bit A/D, 100K pullup to 5V	0–5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU.
C2-34	Analog_In_21	3 Step Enable Switch / TPS2A	C2-24	12 bit A/D, 100K pullup to 5V	0–5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU. See 3StepSwitch 1-axis table for setup.
C2-35	Analog_In_22	USB Logging Activate		12 bit A/D, 100K pullup to 5V	0–5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU. See USBLoggingRequestIn channel for input state. See Setup Wizard page USB Logging for configuration options.
C2-36	Analog_In_23	Charge Out Pressure / TPS2B	C2-22	12 bit A/D, 100K pullup to 5V	0–5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU. See ChargeOutPress [kPa] channel for input state. See Setup Wizard page Charge Out Pressure for calibration options.
C2-37	Digital_In_6	Spare Digital Input		No pullup. Will work with TTL signals.	Input can be assigned to different pins. See Setup Wizard page Input Function Assignments for input mapping options.
C2-38	Digital_In_7	Clutch Switch / Brake Switch	C4-34	No pullup. Will work with TTL signals.	See ClutchSwitch 1-axis table for setup options. Input can be assigned to different pins. See Setup Wizard page Input Function Assignments for input mapping options.
C2-39	Power Ground	Ground	C2-27	Power Ground	Connect directly to battery ground.
C2-40	Power Ground	Ground	C2-28	Power Ground	Connect directly to battery ground.
C2-41	CanH_Bout	CANH		Dedicated High Speed CAN Transceiver	Not used
C2-42	CanL_Bout	CANL		Dedicated High Speed CAN Transceiver	Not used

| Infinity Pin	Hardware Reference	08–10 Dodge Viper Function	08–10 Dodge Viper Pin Destination	Hardware Specification	Notes
C2-43	LowsideSwitch_8	RAD Fan Relay / Control Engine Protect Out	C4-3	Lowside switch, 4A max with internal flyback diode. Inductive load should NOT have full time power.	See Spare GPO1 Basic Setup section of User GPIOs and PWM Setup Wizard page LowSide Assignment Tables for additional options. Activates if any of the following flags are true: OilPressProtectOut, LeanProtectOut, CoolantProtect. Output can be assigned to other functions. See Setup Wizard page LowSide Assignment Tables for additional options.
C2-44	LowsideSwitch_7	Reverse Lock-Out Control	C4-1	Lowside switch, 4A max with internal flyback diode. Inductive load should NOT have full time power.	See Spare GPO1 Basic Setup section of User GPIOs and PWM Setup Wizard page LowSide Assignment Tables for additional options.
C2-45	UEGO 2 VM	UEGO 2 VM		Bosch UEGO Controller	Virtual Ground signal. Connect to pin 5 of Bosch UEGO sensor.
C2-46	UEGO 2 UN	UEGO 2 UN			Nernst Voltage signal. Connect to pin 1 of Bosch UEGO sensor.
C2-47	UEGO 2 IP	UEGO 2 IP			Pumping Current signal. Connect to pin 6 of Bosch UEGO sensor.
C2-48	UEGO 2 IA	UEGO 2 IA			Trim Current signal. Connect to pin 2 of Bosch UEGO sensor.
C2-49	UEGO 2 HEAT	UEGO 2 HEAT			Lowside switch for UEGO heater control. Connect to pin 4 of Bosch UEGO sensor. NOTE that pin 3 of the Sensor is heater (+) and must be power by a fused/switched 12V supply.
C2-50	+12V_R8C_CPU	Battery Perm Power		Dedicated power management CPU	Optional full time battery power. MUST be powered before the ignition switch input is triggered. (See C1-65.)
C2-51	Coil 7	Coil 7	C1-2	25 mA max source current	0–5V Falling edge fire. DO NOT connect directly to coil primary. Must use an ignitor OR CDI that accepts a FALLING edge fire signal.
C2-52	Coil 8	Coil 8	C2-3	25 mA max source current	0–5V Falling edge fire. DO NOT connect directly to coil primary. Must use an ignitor OR CDI that accepts a FALLING edge fire signal.
C2-53	Coil 9	Coil 9	C1-1	25 mA max source current	0–5V Falling edge fire. DO NOT connect directly to coil primary. Must use an ignitor OR CDI that accepts a FALLING edge fire signal.
C2-54	Coil 10	Coil 10	C2-2	25 mA max source current	0–5V Falling edge fire. DO NOT connect directly to coil primary. Must use an ignitor OR CDI that accepts a FALLING edge fire signal.

Infinity Pin	Hardware Reference	08–10 Dodge Viper Function	08–10 Dodge Viper Pin Destination	Hardware Specification	Notes
C2-55	HighsideSwitch_2	Fuel Pump		Multi-function pin depending on hardware configuration	+12V High Side Drive. Will prime for 2 seconds at key on and activate if RPM > 0.
C2-56	Not used	Not used		Not used	Not used

Dodge Pin Numbering
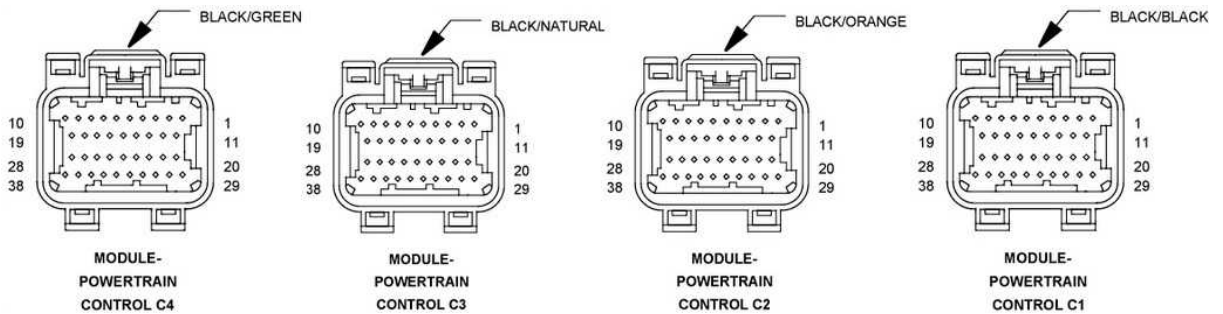
2008–2010 Dodge Viper Harness Connnectors Viewed from Terminal Side

Infinity Pin Numbering
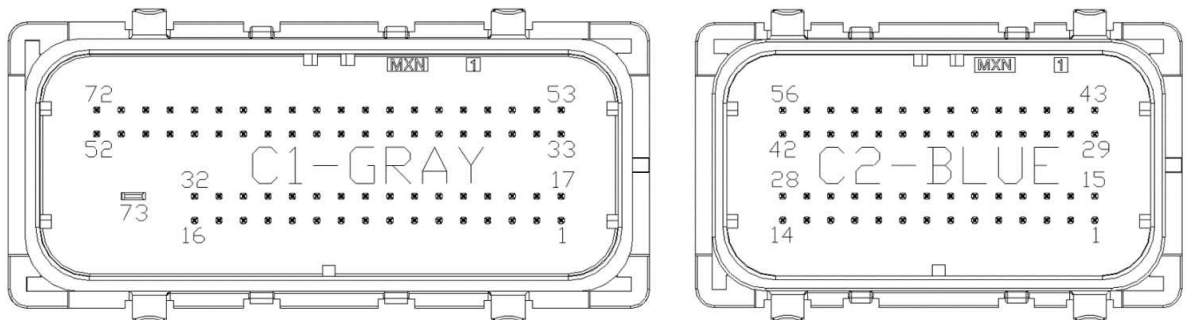
AEM Infinity Connectors Viewed from Wire Side

12 MONTH LIMITED WARRANTY

Advanced Engine Management Inc. warrants to the consumer that all AEM High Performance products will be free from defects in material and workmanship for a period of twelve (12) months from date of the original purchase. Products that fail within this 12-month warranty period will be repaired or replaced at AEM's option, when determined by AEM that the product failed due to defects in material or workmanship. This warranty is limited to the repair or replacement of the AEM part. In no event shall this warranty exceed the original purchase price of the AEM part nor shall AEM be responsible for special, incidental or consequential damages or cost incurred due to the failure of this product. Warranty claims to AEM must be transportation prepaid and accompanied with dated proof of purchase. This warranty applies only to the original purchaser of product and is non-transferable. All implied warranties shall be limited in duration to the said 12-month warranty period. Improper use or installation, accident, abuse, unauthorized repairs or alterations voids this warranty. AEM disclaims any liability for consequential damages due to breach of any written or implied warranty on all products manufactured by AEM. Warranty returns will only be accepted by AEM when accompanied by a valid Return Merchandise Authorization (RMA) number. Product must be received by AEM within 30 days of the date the RMA is issued.

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.

AEM will not be responsible for electronic products that are installed incorrectly, installed in a non-approved application, misused, or tampered with.

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.