

# Instruction Manual



## P/N 30-3502 2001–2005 Honda K Series Infinity 506 and Infinity 508\* Plug & Play Adapter Harness



### 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](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!

\*See next page for important information regarding the use of this harness with Infinity 508

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## OVERVIEW

The 30-3502 AEM Infinity Adapter Kit was designed for the 2001–2005 Honda K Series. This is a true standalone system that eliminates the use of the factory ECU. The use of this adapter makes the kit “plug and play” so no cutting or splicing wires is necessary. The base configuration files available for the Infinity EMS are starting points only and will need to be modified for every specific application.

\*The AEM Infinity EMS will not support the factory A/C Switch and Coolant Gauge that are driven by Honda's Multiplex System.

The available AEM Infinity EMS part numbers for this adapter kit are:

- 30-7106 Infinity 506
- 30-7108 Infinity 508

## 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. The base session is located in C:\Documents\AEM\Infinity Tuner\Sessions\Base Sessions

## DOWNLOADABLE FILES

Files can be downloaded from [www.aeminfinity.com](http://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](http://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>

### Downloadable Configuration files for 2001–2005 Honda K Series

- v96.X Inf-506 Universal
- v96.X Inf-508 Universal

## OPTIONS

### 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 Deutsch

### 30-3602 IP67 Logging Cable

USB A-to-A extension cable: 39" long with right angled connector and bayonet style lock

## \*IMPORTANT INFINITY 508 INFORMATION

The primary difference between the **30-7106 Infinity 506** and **30-7108 Infinity 508** is that the 508 lacks Peak & Hold injector drivers to run low impedance fuel injectors. High impedance (saturated, high-z) fuel injectors must be used with the Infinity 508.

The Infinity 506 and Infinity 508 share a common pinout with the exception of four pins where the Infinity 508 has two each additional fuel injector and ignition coil drivers. Due to the additional fuel injector and ignition coil drivers, the 8h has two fewer digital inputs and lowside outputs. Use of this harness with an Infinity-8h will require slight modification and could result in loss of some plug and play function.

Infinity Pin	Infinity 506 Function	Infinity 508 Function	30-3502 PnP Honda Pin	Notes
<b>C1-3</b>	Lowside6	Injector7	C5	Available LS6 on <b>Infinity 506</b> <u>or</u> Injector7 on <b>Infinity 508</b>
<b>C1-4</b>	Lowside7	Injector8	C4	Available LS7 on <b>Infinity 506</b> <u>or</u> Injector8 on <b>Infinity 508</b>
<b>C1-31</b>	Digital6	Coil7	Unpopulated	Available Digital6 on <b>Infinity 506</b> ; Coil7 not used on <b>Infinity 508</b> .
<b>C1-32</b>	Digital7	Coil8	Unpopulated	Available Digital7 on <b>Infinity 506</b> ; Coil8 not used on <b>Infinity 508</b> .

## 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 for working with these high density connectors before attempting any modifications. The entire Molex MX123 User Manual can be downloaded direct from Molex at:

[http://www.molex.com/mx\\_upload/family//MX123UserManual.pdf](http://www.molex.com/mx_upload/family//MX123UserManual.pdf)



## INFINITY ADAPTER HARNESS

Included with the 2001–2005 Honda K Series kit is an adapter harness. This is used to make the connection between the AEM Infinity EMS and the Honda wiring harness plug and play. This is depicted below with the 80-pin connector and the Honda header. There are also a few other integrated connectors within this harness described below.



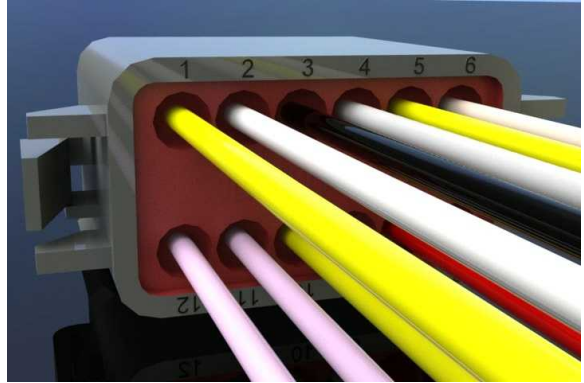
The gray Deutsch 6P DTM "LAMBDA" connector is for connecting a UEGO wideband Bosch LSU4.2 sensor (AEM 30-2001). The UEGO extension harness (AEM 30-3600) mates the adapter harness to the sensor.

The gray Deutsch 4P DTM connector is used for "AEMNET". AEMNet 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 black Delphi 2-pin "FLASH" connector is used for secondary hardware flashing. The included shunt connector jumps the 2 wires together. Once initially flashed, the EMS is normally upgraded in the software, not using this connector.

The red flying lead labeled "Battery+" is to be connected to a permanent +12V source. This source should be independent of the ignition switch. The OEM Honda ECU does not have a permanent +12V power pin, so this must be sourced separate from the OEM connector and should be protected with a 5A fuse.

The gray Deutsch 12P DTM “AUX” connector (shown below) 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 molded into the connector, as shown.



## PINOUTS

### Infinity Pinout

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

Infinity Pin	Infinity Assignment	Honda Pin	Honda Description	Infinity Hardware Specification	Notes
1	LS 4	E26	Engine Speed Pulse	Lowside switch, 4A max, No internal flyback diode.	The tachometer is pre-calibrated using a combination of the LS4_Freq [Hz] 1-axis table and the LS4_Duty [%] 2-axis table.
2	LS 5	B23	Variable Valve Timing Control	Lowside switch, 4A max with internal flyback diode. Inductive load should NOT have full time power.	The Variable Valve Timing Control is pre-calibrated using a combination of the LS5_Freq [Hz] 1-axis table and the LS5_Duty [%] 2-axis table.
3	LS 6 (Infinity 6)	C5	---	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. (Infinity 6 only)
	Injector 7 (Infinity 8h)		---	For use with high impedance (10-15 ohms) injectors only, 1.7Amax.	Spare injector output Injector 7 (Infinity 8h only)
4	LS 7 (Infinity 6)	C4	---	Lowside switch, 4A max, No internal flyback diode.	See Wizard page "LowSide Assignment Tables" for output assignment. (Infinity 6 only)
	Injector 8 (Infinity 8h)		---	For use with high impedance (10-15 ohms) injectors only, 1.7Amax.	Spare injector output Injector 8 (Infinity 8h only)
5	UEGO1 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 powered by a fused/switched 12V supply.
6	UEGO1 IA	---	---	Bosch UEGO controller	Trim Current signal. Connect to pin 2 of Bosch UEGO sensor.
7	UEGO1 IP	---	---	Bosch UEGO controller	Pumping Current signal. Connect to pin 6 of Bosch UEGO sensor.
8	UEGO1 UN	---	---	Bosch UEGO controller	Nernst Voltage signal. Connect to pin 1 of Bosch UEGO sensor.
9	UEGO1 VM	---	---	Bosch UEGO controller	Virtual Ground signal. Connect to pin 5 of Bosch UEGO sensor.
10	+12V Perm Power	---	Voltage Back Up	Dedicated power management CPU	Full time battery power. MUST be powered before the ignition switch input is triggered. NOTE: Fused battery power need to supply to the flying lead on the AEM adapter harness.
11	Coil 4	A27	Ignition Coil Pulse No. 4	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	Infinity Assignment	Honda Pin	Honda Description	Infinity Hardware Specification	Notes
12	Coil 3	A28	Ignition Coil Pulse No. 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.
13	Coil 2	A29	Ignition Coil Pulse No. 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.
14	Coil 1	A30	Ignition Coil Pulse No. 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.
15	---	---	---	---	---
16	---	---	---	---	---
17	VR0 (+) - Crank		---	Differential Variable Reluctance Zero Cross Detection	See Setup Wizard page Cam/Crank for options.
18	VR0 (-) - Crank		---	Differential Variable Reluctance Zero Cross Detection	See Setup Wizard page Cam/Crank for options.
19	VR1 (-) - Cam		---	Differential Variable Reluctance Zero Cross Detection	See Setup Wizard page Cam/Crank for options.
20	VR1 (+) - Cam		---	Differential Variable Reluctance Zero Cross Detection	See Setup Wizard page Cam/Crank for options.
21	LS 2	B6	Radiator Fan Control	Lowside switch, 4A max, No internal flyback diode.	See Setup Wizard Page "LowSide Assignment Tables" for output assignment and 2D table "LS2_Duty [%]" for on/off activation.
22	LS 3	A12	Idle Air Control Valve	Lowside switch, 4A max with internal flyback diode. Inductive load should NOT have full time power.	See Setup Wizard page and corresponding Tables for Idle Air Control.
23	Sensor GND	A10	Sensor Ground 1	Dedicated analog ground	Analog 0–5V sensor ground also found on aux connector.
24	Sensor GND	A11	Sensor Ground 2	Dedicated analog ground	Analog 0–5V sensor ground.
25	Digital 0 - Crank	A7	CKP	10K pullup to 12V. Will work with ground or floating switches.	See Setup Wizard page Cam/Crank for options.
26	Digital 1 - Cam1	A26	CMP2	10K pullup to 12V. Will work with ground or floating switches.	See Setup Wizard page Cam/Crank for options.
27	Digital 2 - Cam2	A25	CMP1	10K pullup to 12V. Will work with ground or floating switches.	See Setup Wizard page Cam/Crank for options.
28	Digital 3 - Flex Fuel	---	---	10K pullup to 12V. Will work with ground or floating switches.	Found on the Aux Connector. Input can be assigned to different pins. See Setup Wizard page Input Function Assignments for input mapping options.
29	Digital 4 - VSS#1	A18	Vehicle Speed Sensor	10K pullup to 12V. Will work with ground or floating switches.	See Setup Wizard page Vehicle Speed for calibration constant.
30	Digital 5 -	---	---	10K pullup to 12V. Will work with ground or floating switches.	Found on the Aux Connector. Input can be assigned to different pins. See Setup Wizard page Input Function Assignments for input mapping options.

Infinity Pin	Infinity Assignment	Honda Pin	Honda Description	Infinity Hardware Specification	Notes
31	Digital 6 (Infinity 6)		---	10K pullup to 12V. Will work with ground or floating switches.	Input can be assigned to different pins. See Setup Wizard page Input Function Assignments for input mapping options. *Coil 7 for Infinity 8h
32	Digital 7 (Infinity 6)		---	10K pullup to 12V. Will work with ground or floating switches.	Input can be assigned to different pins. See Setup Wizard page Input Function Assignments for input mapping options. *Coil 8 for Infinity 8h
33	GND	A4	Power Ground 1	Power Ground	Connects to chassis ground and AEMNet
34	CAN A -		---	Dedicated High Speed CAN Transceiver	4P DTM Connector found in AEM adapter harness. Contact AEM for additional information.
35	CAN A +		---	Dedicated High Speed CAN Transceiver	4P DTM Connector found in AEM adapter harness. Contact AEM for additional information.
36	CAN B -		---	Dedicated High Speed CAN Transceiver	Not used
37	CAN B +		---	Dedicated High Speed CAN Transceiver	Not used
38	Temp 1 - Coolant Temp	B8	Engine Coolant Temp Sensor	12 bit A/D, 2.49K pullup to 5V	See "Coolant Temperature" Setup Wizard for selection.
39	Temp 2 - Air Temp (Manifold)	B17	Intake Air Temp Sensor	12 bit A/D, 2.49K pullup to 5V	See "Air Temperature" Setup Wizard for selection.
40	Temp 3 - Oil Temp		---	12 bit A/D, 2.49K pullup to 5V	Found on the Aux Connector. 0-5V analog signal.
41	LS 0	E1	Fuel Pump Relay	Lowside switch, 4A max, No internal flyback diode.	Switched ground. Will prime for 2 seconds at key on and activate if RPM > 0.
42	LS 1		---	Lowside switch, 4A max with internal flyback diode. Inductive load should NOT have full time power.	Found in Aux Connector. See Setup Wizard page Boost Control for options. Monitor BoostControl [%] channel for output state.
43	GND	A5	Power Ground 2	Power Ground	Connect directly to battery ground.
44	Knock 0	A9	Knock Sensor	Dedicated knock signal processor	See Knock in Setup Wizard for options.
45	Knock 1			Dedicated knock signal processor	See Knock in Setup Wizard for options.
46	GND			Power Ground	Connect directly to battery ground.
47	12V_Relay_Control	E7	Main Relay Control	0.7A max ground sink for external relay control	Will activate at key ON and at key OFF according to the configuration settings.
48	+12V SW (Ign Switch)	E9	Power Source 1	10K pulldown	Full time battery power must be available at infinity pin 10 before this input is triggered.
49	+5V_Out	A20	Sensor Voltage 1	Regulated, fused +5V supply for sensor power	Analog sensor power and found on auxiliary connector
50	+5V_Out	A21	Sensor Voltage 2	Regulated, fused +5V supply for sensor power	Analog sensor power
51	Ana7 - Throttle	A15	Throttle Position Sensor	12 bit A/D, 100K pullup to 5V	0-5V analog signal. 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.
52	Ana8 - Map	A19	MAP Sensor	12 bit A/D, 100K pullup to 5V	0-5V analog signal. See the Manifold Pressure in Setup Wizard for setup and calibration.



Infinity Pin	Infinity Assignment	Honda Pin	Honda Description	Infinity Hardware Specification	Notes
53	Ana9 - Fuel Press	---	---	12 bit A/D, 100K pullup to 5V	0–5V analog signal found on the Auxiliary Connector
54	VR2 (+) - Driven Wheel	---	---	Differential Variable Reluctance Zero Cross Detection	See Driven Wheel Speed Calibration in the Setup Wizard Vehicle Speed page.
55	VR2 (-) - Driven Wheel	---	---	Differential Variable Reluctance Zero Cross Detection	See Driven Wheel Speed Calibration in the Setup Wizard Vehicle Speed page.
56	VR3 (-) - Tag Wheel	---	---	Differential Variable Reluctance Zero Cross Detection	See Non Driven Wheel Speed Calibration in the Setup Wizard Vehicle Speed page.
57	VR3 (+) - Tag Wheel	---	---	Differential Variable Reluctance Zero Cross Detection	See Non Driven Wheel Speed Calibration in the Setup Wizard Vehicle Speed page.
58	HS Out 0	B15	VTEC solenoid Valve	0.7A max, High Side Solid State Relay	+12V High Side Drive. See Setup Wizard Honda VTEC page for options.
59	Stepper_1B	---	---	Automotive, Programmable Stepper Driver, up to 28V and $\pm 1.4A$	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.
60	Stepper_2B	---	---	Automotive, Programmable Stepper Driver, up to 28V and $\pm 1.4A$	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.
61	HBridge0_0	---	---	5.0A max Throttle Control Hbridge Drive	
62	HBridge0_1	---	---	5.0A max Throttle Control Hbridge Drive	
63	+12V	A2/B1	Main Power	Main Power	12 volt power from relay powers the Infinity, Lambda sensor, and AEMNet
64	Injector 6	C3	---	Saturated or peak and hold, 3A max continuous	Spare injector output Injector 6 *No peak and hold injector for Infinity 8h
65	Injector 5	C2	---	Saturated or peak and hold, 3A max continuous	Spare injector output Injector 5 *No peak and hold injector for Infinity 8h
66	Injector 4	B2	Injector 4	Saturated or peak and hold, 3A max continuous	Injector 4 *No peak and hold injector for Infinity 8h
67	GND	---	---	Power Ground	Connects directly to ground
68	+12V	A3	Main Power	Main Power	12 volt power from relay powers the Infinity
69	Ana19 - APP2	---	---	12 bit A/D, 100K pullup to 5V	0–5V analog signal. Do not connect signals referenced to +12V as this can permanently damage the ECU.
70	Ana18 - APP1	---	---	12 bit A/D, 100K pullup to 5V	0–5V analog signal. Do not connect signals referenced to +12V as this can permanently damage the ECU.
71	Ana16 - Mode SW	---	---	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 'Mode Switch' for input state. Also assignable to multiple functions. See Setup Wizard for details.

Infinity Pin	Infinity Assignment	Honda Pin	Honda Description	Infinity Hardware Specification	Notes
72	Harness_Flash_Enable	---	---	10K pulldown	Not usually needed for automatic firmware updates through Infinity Tuner. If connection errors occur during update, jump the 12V Flash Connector before proceeding with upgrade. Disconnect the 12V Flash Connector after the update.
73	Ana13 - Oil Press	---	---	12 bit A/D, 100K pullup to 5V	0-5V analog signal found on the Auxiliary Connector
74	Ana11 - Shift SW	---	---	12 bit A/D, 100K pullup to 5V	0-5V analog signal found on the Auxiliary Connector
75	Ana10	---	---	12 bit A/D, 100K pullup to 5V	0-5V analog signal found on the Auxiliary Connector
76	Injector 3	B3	Injector 3	Saturated or peak and hold, 3A max continuous	Injector 3 *No peak and hold injector for Infinity 8h
77	Injector 2	B4	Injector 2	Saturated or peak and hold, 3A max continuous	Injector 2 *No peak and hold injector for Infinity 8h
78	Injector 1	B5	Injector 1	Saturated or peak and hold, 3A max continuous	Injector 1 *No peak and hold injector for Infinity 8h
79	Stepper_2A	---	---	Automotive, Programmable Stepper Driver, up to 28V and $\pm 1.4A$	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.
80	Stepper_1A	---	---	Automotive, Programmable Stepper Driver, up to 28V and $\pm 1.4A$	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.

## AUX Connector Pinout

Deutsch Pin	Infinity Pin	Wire Color	Pin Name	Default Pin Function
1	53	Black	Analog_In_9	Fuel Pressure
2	40	Black	Analog_In_Temp_3	Oil Temperature
3	23	Black	AGND	Sensor Ground
4	49	Black	+5V_OUT	Sensor +5V
5	73	Black	Analog_In_13	Oil Pressure
6	30	Black	Digital_In_5	Clutch Switch, Nitrous Arm
7	42	Black	LS1	Boost Control
8	63	Black	+12V	+12V
9	28	Black	Digital_In_3	Flex Fuel Sensor (Hz)
10	71	Black	Analog_In_16	Charge Pressure
11	75	Black	Analog_In_10	Baro Pressure
12	74	Black	Analog_In_11	Exh Back Pressure

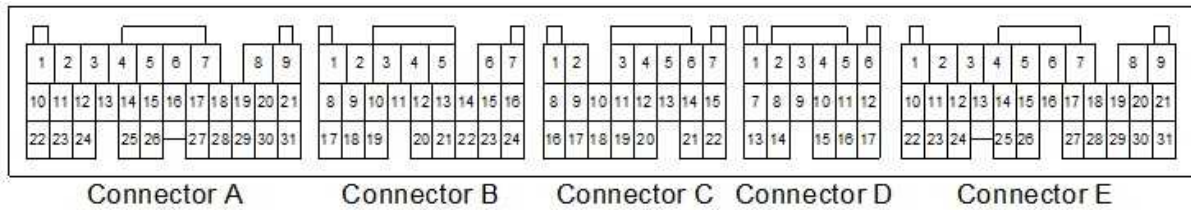
### Miscellaneous Pinouts

LAMBDA 1		
Deutsch Pin	Infinity Pin	Default Pin Function
1	8	UEGO1 UN
2	6	UEGO1 IA
3	63	+12V
4	5	UEGO1 Heat
5	9	UEGO1 VM
6	7	UEGO1 IP

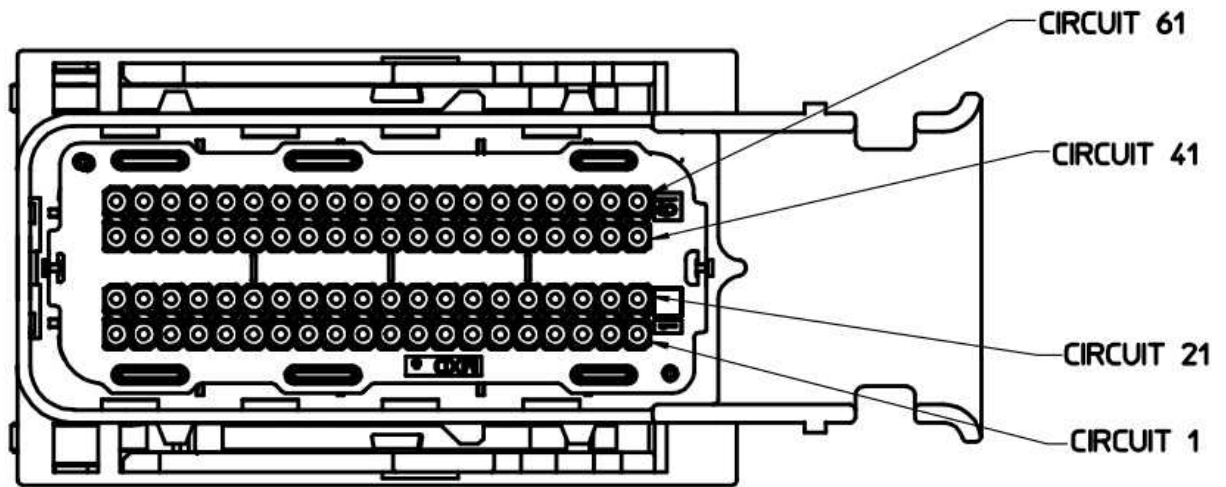
AEMNet		
Deutsch Pin	Infinity Pin	Default Pin Function
1	35	CAN A+
2	34	CAN A-
3	63	+12V
4	33	Ground

FLASH ENABLE		
Delphi Pin	Infinity Pin	Default Pin Function
A	10	Permanent Power
B	72	Harness Flash Enable

### Honda Pin Numbering



## Infinity Pin Numbering



Viewed From Wire Side

