



AEM
PERFORMANCE ELECTRONICS

INFINITY

Hardware Specification

30-71XX Systems

**THIS PRODUCT IS LEGAL IN CALIFORNIA FOR RACING VEHICLES ONLY
AND SHOULD NEVER BE USED ON PUBLIC HIGHWAYS.**



WARNING:

WARNING:

This installation is not for the tuning novice! Use this system with EXTREME caution! 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. A list of AEM trained tuning shops is available at www.aemelectronics.com/dealer_locator.php or by calling 800-423-0046.

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 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!

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Instruction Part Number: 10-71XX-Hardware
Document Build 8/25/2014

Hardware

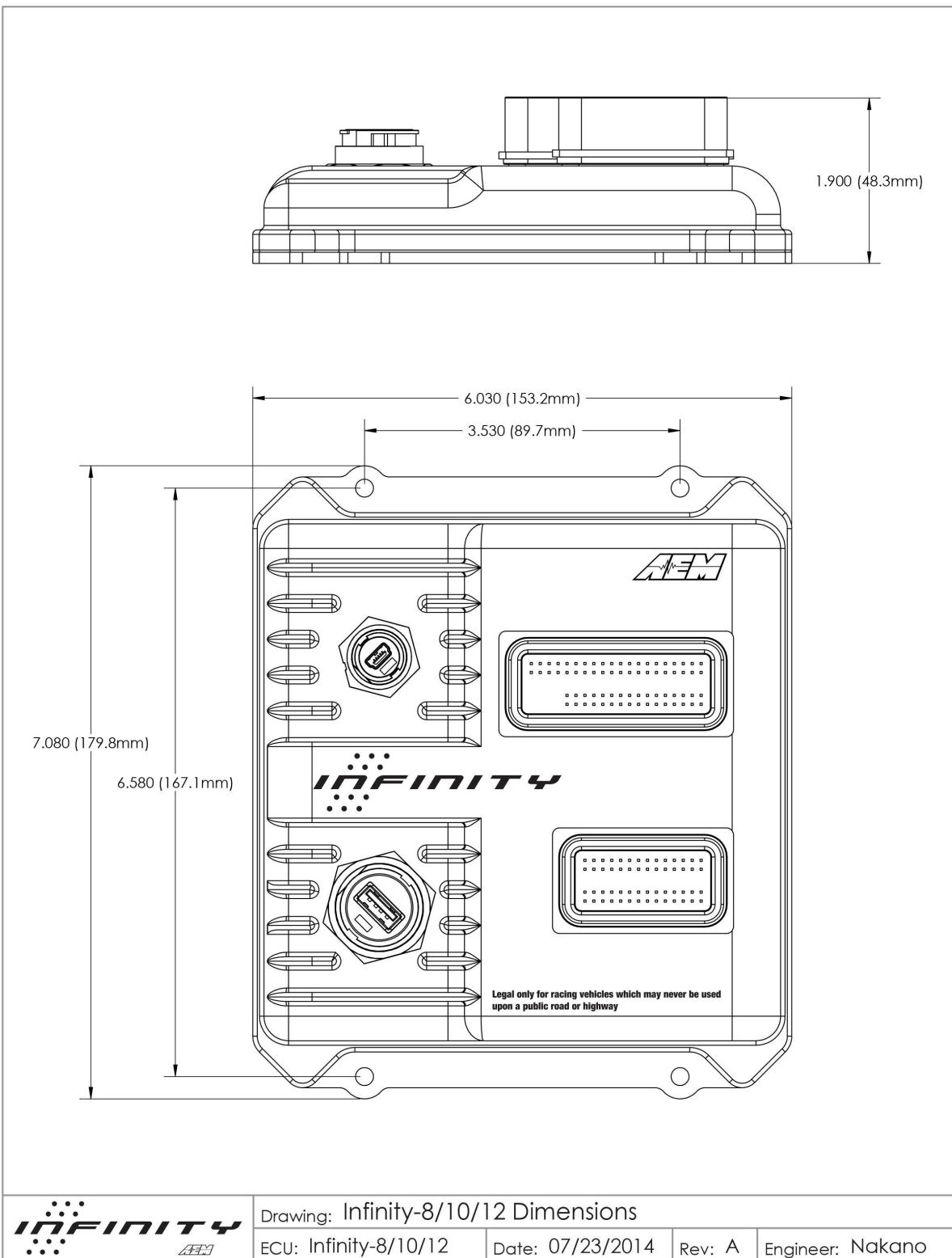
1.1 Infinity Hardware Specifications

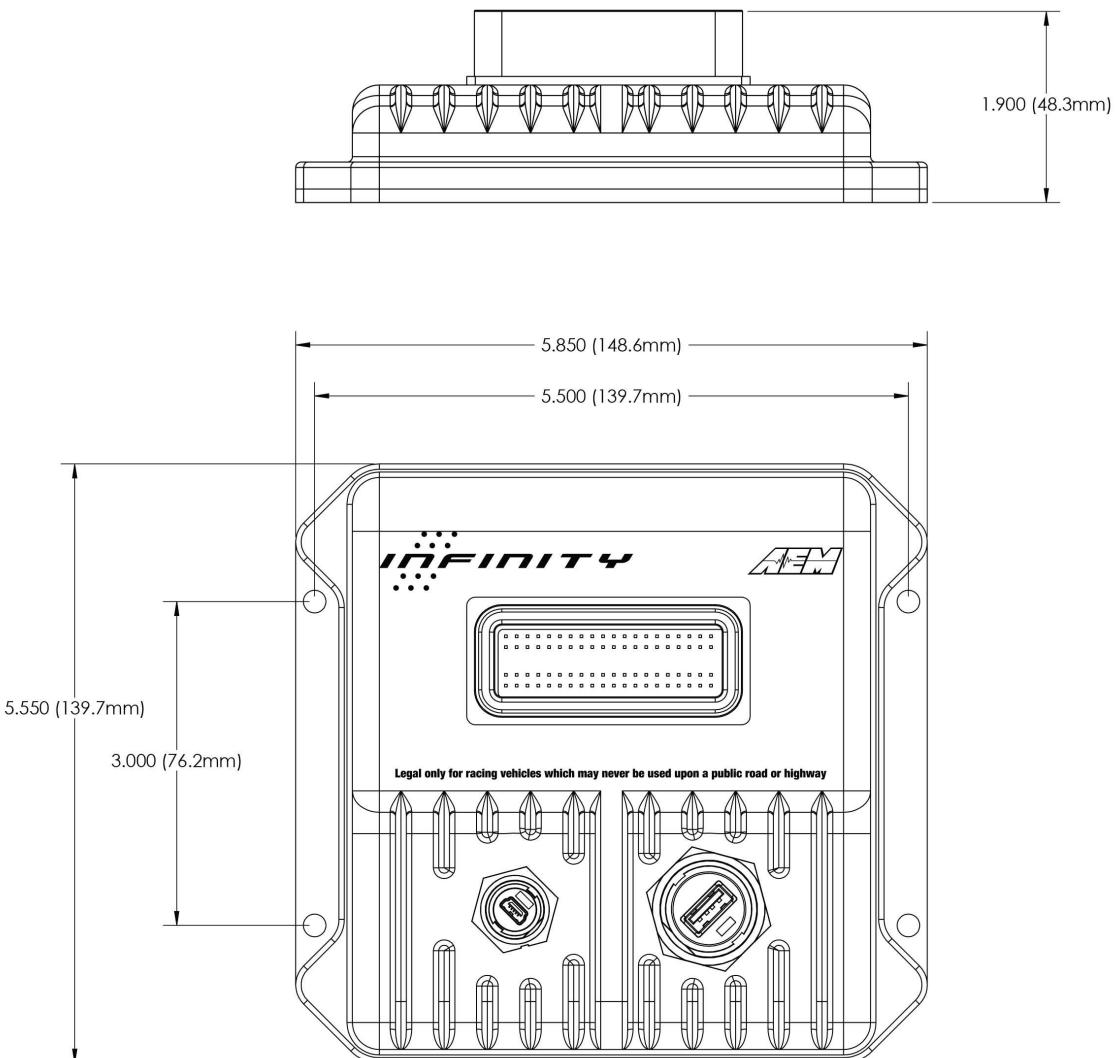
| Specifications | Infinity-6 | Infinity-8h | Infinity-8 | Infinity-10 | Infinity-12 |
|---------------------------------------|------------|-------------|------------|-------------|-------------|
| Cylinders | Up to 6 | Up to 8 | Up to 8 | Up to 10 | Up to 12 |
| Injectors, Low Impedance (Sequential) | 6 | N/A | 8 | 10 | 12 |
| Injectors High Impedance (Sequential) | Up to 6 | Up to 8 | 8 | 10 | 12 |
| Coils-0-5V Falling Edge | 6 | 8 | 8 | 10 | 12 |
| Connector Pins | 80 | 80 | 129 | 129 | 129 |
| Drive-by-Wire | Single | Single | Dual | Dual | Dual |
| H-Bridge Channels | 1 | 1 | 2 | 2 | 2 |
| RS232 Channels* | 1 | 1 | 1 | 1 | 1 |
| CAN Channels | 2 | 2 | 2 | 2 | 2 |
| 2-Stroke Engines | Yes | Yes | Yes | Yes | Yes |
| 4-Stroke Engines | Yes | Yes | Yes | Yes | Yes |
| Knock Control | 2-Channel | 2-Channel | 2-Channel | 2-Channel | 2-Channel |
| Analog Voltage Inputs | Up to 9 | Up to 9 | Up to 17 | Up to 17 | Up to 17 |
| Analog Temp Inputs | Up to 3 | Up to 3 | Up to 6 | Up to 6 | Up to 6 |
| VR/Mag Inputs | Up to 4 | Up to 4 | Up to 6 | Up to 6 | Up to 6 |
| Digital Inputs | Up to 8 | Up to 6 | Up to 8 | Up to 8 | Up to 8 |
| Internal Wideband UEGO Controller | 1 | 1 | 2 | 2 | 2 |

| | | | | | |
|---|--|--|--|--|--|
| High Side Outputs | 1 | 1 | Up to 2 | Up to 2 | Up to 2 |
| Low Side Outputs | 8 | 6 | 10 | 10 | 10 |
| 4-Wire Stepper Motor Control | Yes | Yes | Yes | Yes | Yes |
| Boost Control (RPM, Time, Gear, VSS, Switch Input, Flex Fuel Content) | Yes | Yes | Yes | Yes | Yes |
| Engine Protection | Yes | Yes | Yes | Yes | Yes |
| Variable Cam Control | Up to 2 | Up to 2 | Up to 4 | Up to 4 | Up to 4 |
| Launch Control | Yes | Yes | Yes | Yes | Yes |
| Nitrous Control | Single Stage |
| Data Logging | Up to 64 GB |
| Traction Control | Up to 2-Wheel Speed | Up to 2-Wheel Speed | Up to 4-Wheel Speed | Up to 4-Wheel Speed | Up to 4-Wheel Speed |
| Weather Resistance | Yes, Sealed Enclosure with IP67 Connectors |
| Enclosure Dims | 5.855"x5.55"x1 .8" | 5.855"x5.55"x1 .8" | 6.75"x6.00"x1. 8" | 6.75"x6.00"x1. 8" | 6.75"x6.00"x1. 8" |
| Weight | 18.8 oz/476.27g | 18.8 oz/476.27g | 24oz/680g | 24oz/680g | 24oz/680g |

**Dual use pins. Tx and Rx shared with 2 digital inputs.

1.2 ECU Installation Dimensions





Drawing: Infinity-6/8h Dimensions

ECU: Infinity-6/8h

Date: 07/23/2014

Rev: A

Engineer: Nakano

Wiring, Pinouts and Schematics

2.1 Wiring

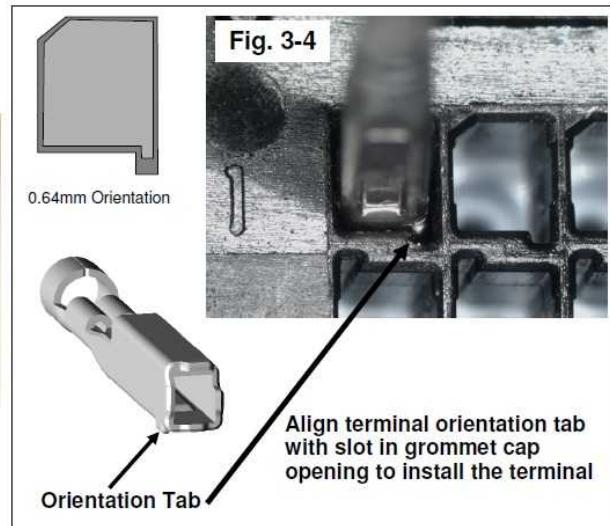
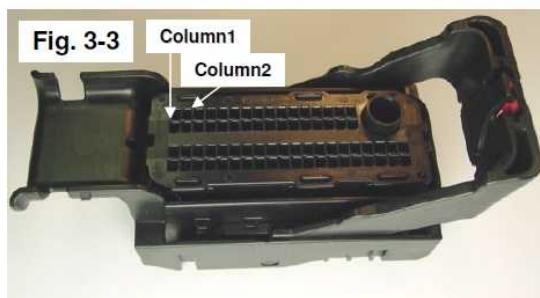
2.1.1 Wire Harness Options

2.1.1.1 General

The Infinity-10 uses the MX123 Sealed Connection System from Molex. The following sections include excerpts from the Molex MX123 User Manual illustrating the basic procedures for working with these high density connectors. 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

Terminal Installation

- For ease of assembly, it is recommended that when populating the connector, wires be populated in the following manner (see Fig 3-3): 1) Fully populate down Column 1 and then 2) continue on to Column 2 and so forth until the entire connector is populated. Refer to Fig 3-4 for proper terminal orientation.



Terminal Installation (continued)

- With TPA still in pre-lock position, orient terminal to rear of connector.
- Grip the wire (Fig. 3-5) and insert terminal through appropriate circuit opening (Fig. 3-6). If resistance is encountered, retract the terminal and adjust the angle of insertion. Continue inserting the terminal until it stops and locks up on the lock finger with an audible click. Tug slightly on wire to ensure terminal is locked.

Fig. 3-5

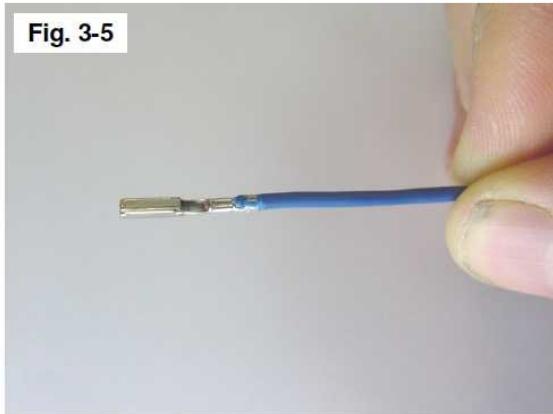
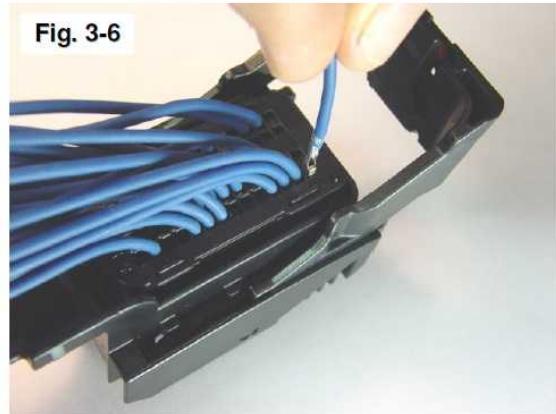


Fig. 3-6



TPA - Seating

- With the terminals fully installed, the TPA can be seated into its final lock position by applying an even force to both ends (Fig. 3-7) until it comes to a stop (Fig. 3-8). If the TPA resists, it may be detecting a partially installed terminal. Pull the TPA back into its pre-lock position and make sure all terminals are fully seated. Upon completion, the TPA can be seated.

Fig. 3-7

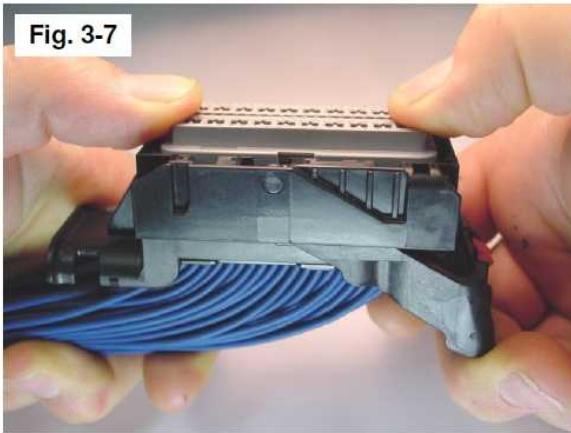
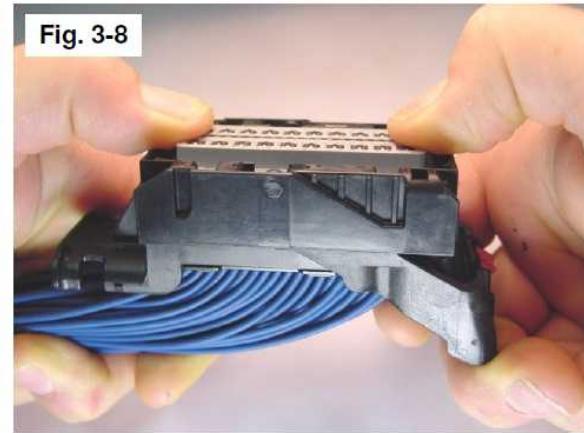


Fig. 3-8



Dress Cover Installation

- After tie-wrapping the wire bundle, install dress cover by inserting the front of the dress cover into the connector housing (Fig. 3-13) and pushing the opposite end (Fig. 3-14) until it snaps into position. **Fully seated dress cover and TPA can be verified by ensuring MAX. height dimension (Fig. 3-14).**

Fig. 3-13



Step 1: Insert front end into housing.

Fig. 3-14



Step 2: Press down to lock position.

Harness Connector To Header/Controller Color Identification

- The harness connector TPA will be color-coded to match the appropriate controller header (Fig. 4-1)



Harness Connector to Header/Controller Installation Into Pre-Lock

- Correctly orient the harness connector (align keying features) onto the controller connector (Fig. 4-2). Grip the top of the harness connector and evenly push the connector downward until the lever moves slightly forward (Fig. 4-3).

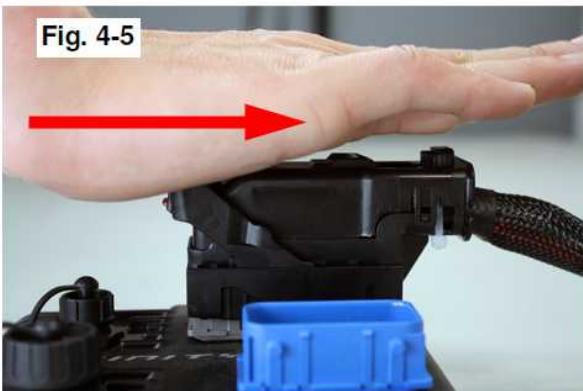


- **Caution!**
- **Installing the harness connector at an extreme angle (see fig 4- 4) may result in seal “scooping” creating an environment for fluid ingress.**
- **Damage to the header, or connector is possible if excessive force is used.**



Harness Connector to Header/Controller Mating To Final Lock

- To begin mating the harness connector to the header/controller, place the palm of your hand on the face of the lever. Push back the connector lever towards the wire bundle to engage the harness connector to the controller header (Fig. 4-5). Mating force should be smooth and continuous. If not, remove the connector and repeat step B.
- Continue to rotate the lever arm (Fig. 4-6).



Harness Connector to Header/Controller Mating To Final Lock (continued)

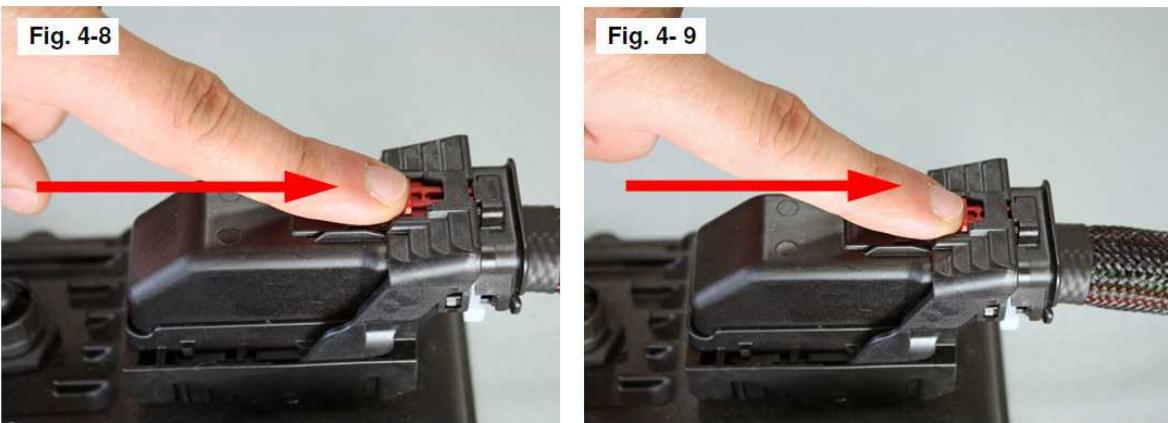
- Continue to rotate the lever until you hear the primary latch click into final lock over dress cover primary latch (Fig. 4-7a and 4-7b).



Primary Latch Engaged

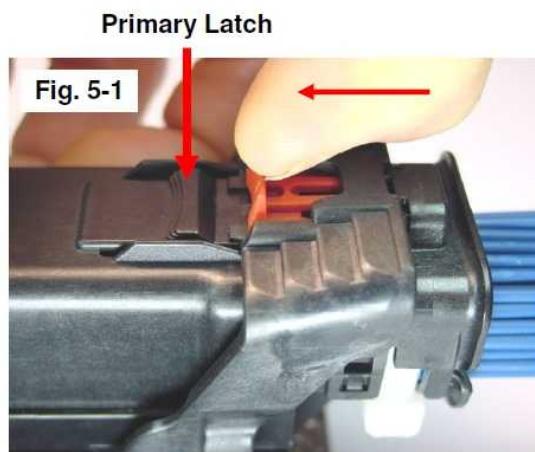
Connector Position Assurance (CPA)

- With the harness connector lever arm in its latched position, the CPA can now be engaged. Push the CPA toward the wire bundle (Fig. 4-8) until it clicks into its final locked position (Fig. 4-9).



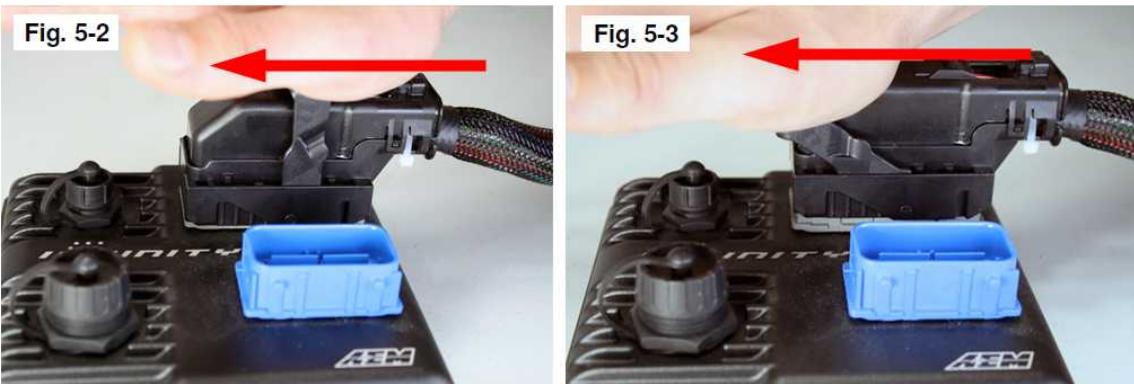
Harness Connector Removal From Module

- To un-mate the harness connector from the header/controller, push the CPA away from the wire bundle. Depress the primary latch on the top of the harness connector so the lever arm releases from the harness connector (Fig. 5-1).



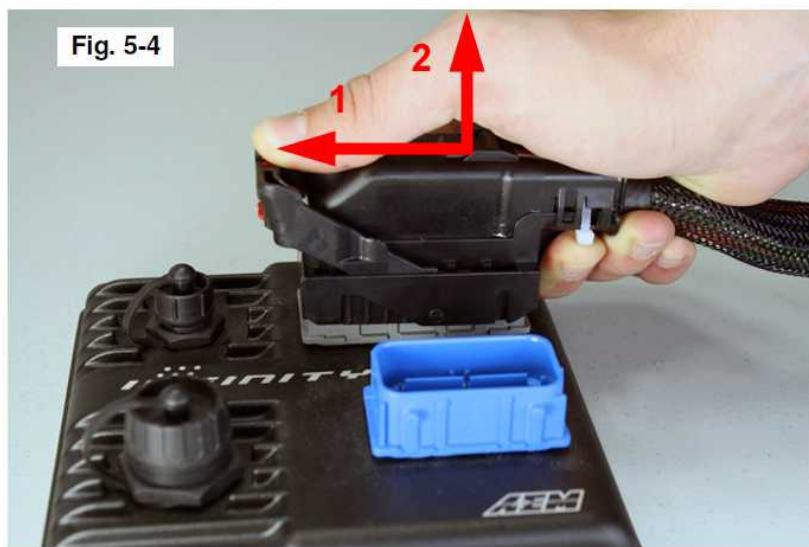
Harness Connector Removal From Module (continued)

- Push the top of the mate lever arm away from wire bundle using the palm of your hand (Fig. 5-2).
- Continue to rotate the lever until the connector lifts into pre-lock (Fig. 5-3). The lever MUST be in the pre-lock position or the connector can not be easily removed from the module. The lever must be fully forward for the harness connector to be in pre-lock position.



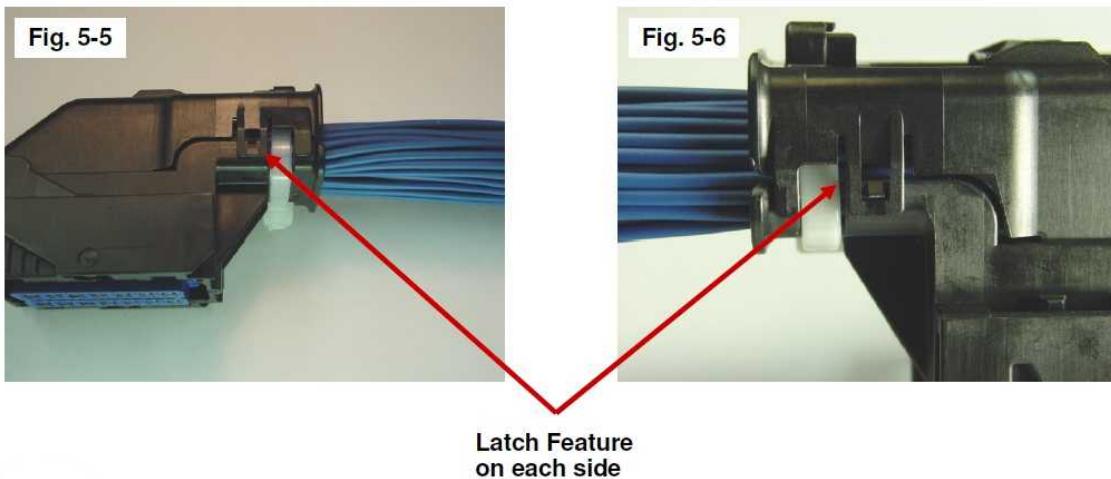
Harness Connector Removal From Module (continued)

- While pushing forward on the lever, grip the back of the harness and evenly pull straight upwards and away from the module (Fig. 5-4).



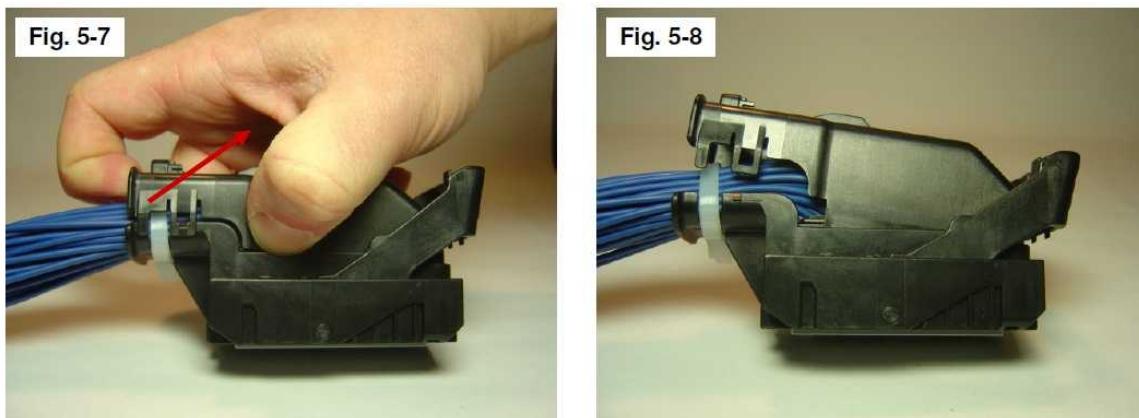
Dress Cover Removal

- With the harness connector removed from header/controller (Fig. 5-5), unlatch the dress cover latch features on each side of the dress cover guide (Fig. 5-6). A small screwdriver or similar tool can be used to release the latches.



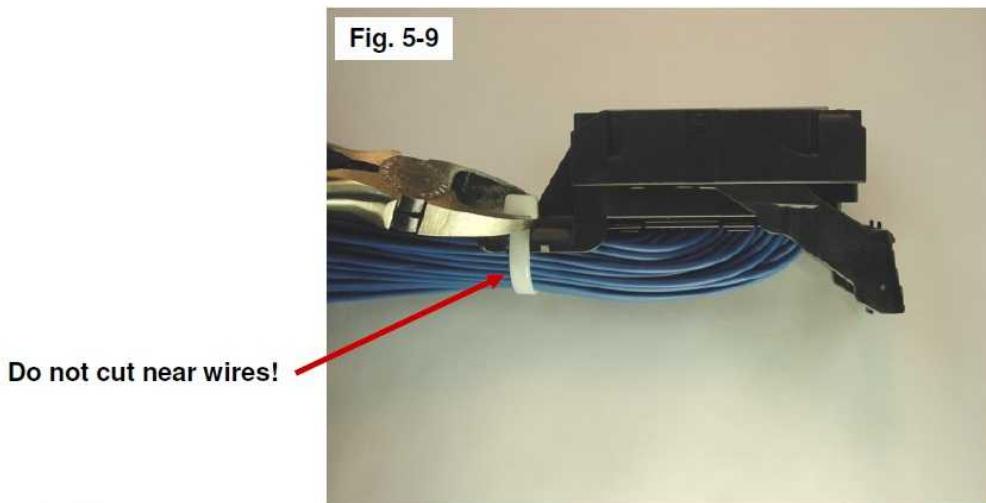
Dress Cover Removal (continued)

- With the dress cover latch features unlatched, insert your finger into dress cover (Fig. 5-7) and pull up and away from the wire bundle. The dress cover can be completely removed at this point (Fig. 5-8).



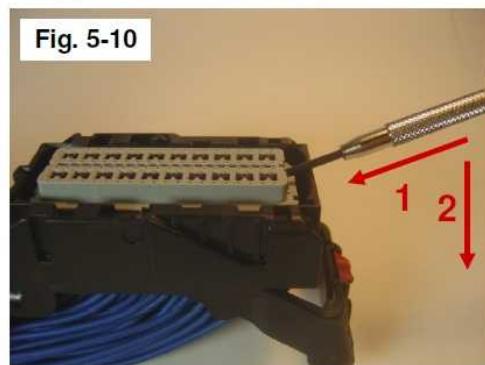
Tie-Wrap Removal

- The tie-wrap can now be removed from the wire bundle (Fig. 5-9) for easier access to the wire to be serviced. **The tie-wrap MUST be cut under the wire dress tab to prevent damage to the wires!**

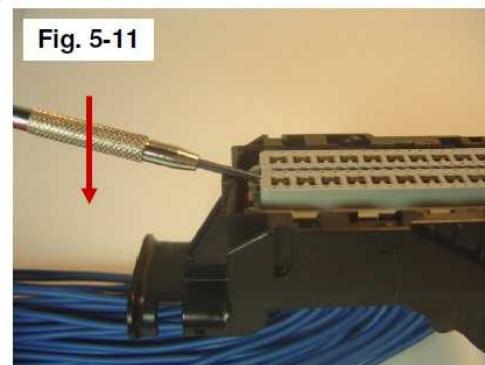


TPA Servicing

- TPA should never be removed from the connector.**
- Step 1: Insert a small (2.0mm maximum) flat blade screwdriver into the TPA service hole at one end of the connector (Fig. 5-10) and pry up. The TPA will stop when it reaches its pre-lock position for terminal servicing.
- Step 2: On the other end of the TPA, repeat Step 1 (Fig. 5-11) until the TPA reaches its pre-lock position at both ends of the harness connector.
- Approximate TPA travel will be 5.0mm (See Figs. 5-12 and 5-13 on next page).



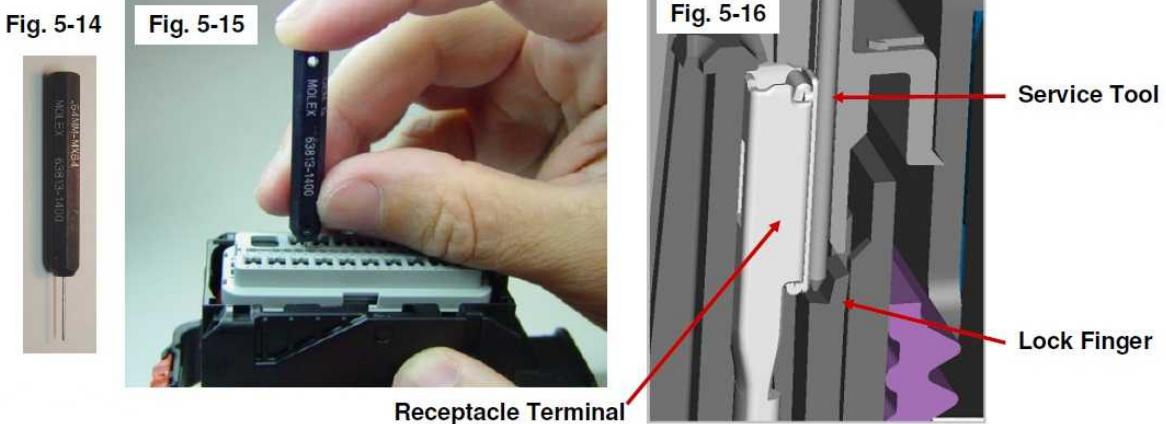
Step 1: Pry up TPA



Step 2: Pry up opposite end of TPA

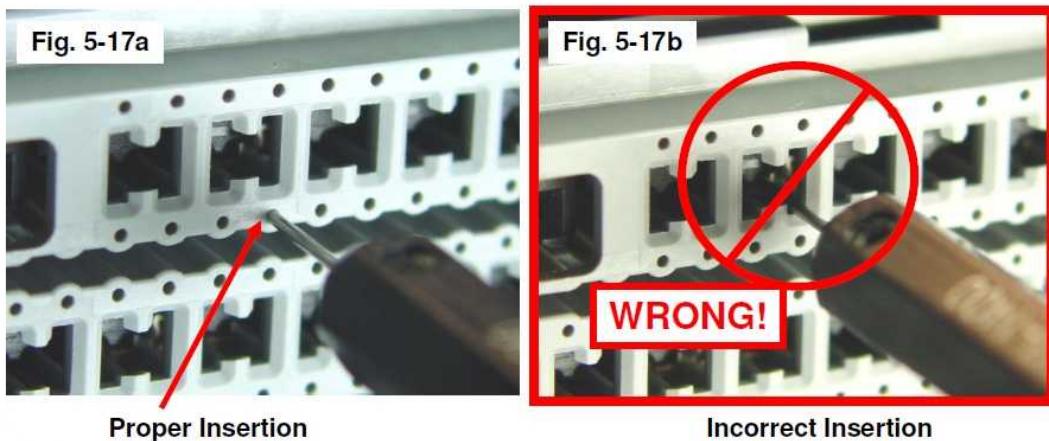
MX64 Receptacle Terminal Removal

- Ensure TPA is in pre-lock position!
- Holding the 0.64mm service tool (Fig. 14: Molex part no. 63813-1400 or alternate GM part no. J-38125-213) between middle finger and thumb, with index finger on top of the tool, insert the tip of the tool into the terminal service hole adjacent to the terminal to be serviced (Fig. 5-15).
- After first pushing the wire/terminal forward, use your index finger to push the service tool (Fig. 5-15) until a large amount of resistance is felt. This wedges the service tool between the terminal and the lock finger, therefore deflecting the lock finger. (Fig. 5-16).



MX64 Receptacle Terminal Removal (continued)

- Fig. 5-17a shows proper insertion of the service tool. Avoid inserting the service tool into the terminal opening (Fig. 5-17b) as this may damage the terminal.



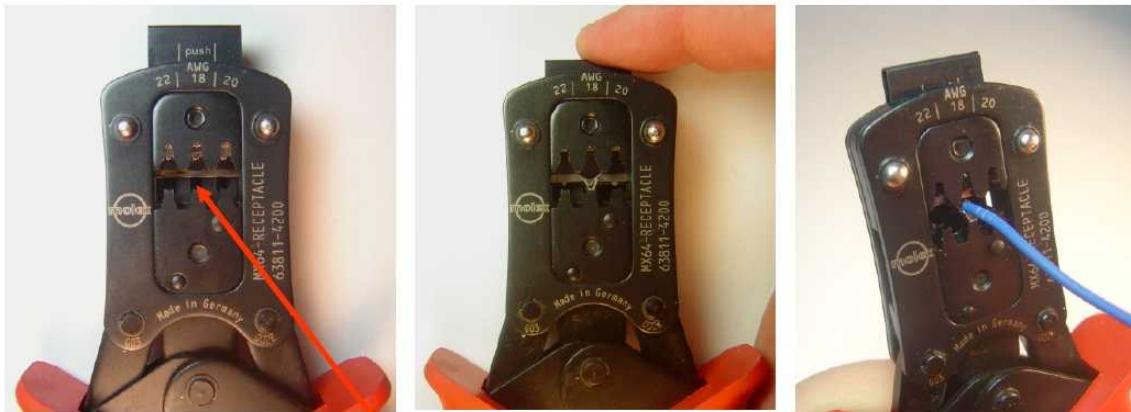
MX64 Receptacle Terminal Removal (continued)

- Once the terminal lock finger has been disengaged, transfer middle finger and thumb to connector housing, while maintaining index finger pressure on the tool. Pull on the wire to remove the terminal (Fig. 5-18). If the terminal resists, the service tool may not be fully engaged. Repeat the servicing instructions, starting at page 33.
- Do not use excessive force. Excessive force can damage the lock finger. Do not apply any lateral force. The lock finger is displaced by linear insertion alone.



Terminal Crimping

- If the 0.64mm receptacle terminal needs to be replaced, a new one can be hand crimped using GM Crimp Tool #XX019825 or Molex Crimp Tool #63811-4200.



1.) Identify the wire gauge you need to crimp. Notice the rectangular shape of the terminal cavity.

2.) Insert the correct terminal and press the wire-stop down.

3.) Insert the wire until the wire hits the wire stop. Squeeze the handles through the last "click" until they release.

Terminal Crimping (continued)

- Contact Molex for terminal sales drawings. Hand crimp instructions, strip length recommendations, and crimp height requirements are available in the Molex Spec. Sheet for Tool #63811-4200.
- If the Yazaki 2.80mm receptacle terminal needs to be replaced, a new one can be hand crimped with the appropriate cable seal using crimp tools #J-38125-6 and #J-38125-7. These tools can be ordered from SPX Kent-Moore (1-800-345-2233).

2.2 Universal Pinout, Infinity-8/10/12

| Infinity Pin | Hrdwr Ref. | Hardware Specification | Notes |
|--------------|---------------------|--|---|
| C1-1 | LowsideSwitch_4_Out | Lowside switch, 4A max, NO internal flyback diode. No pullup | Normally used as A/C Relay Control output. |
| C1-2 | LowsideSwitch_5_Out | Lowside switch, 4A max with internal flyback diode. Inductive load should NOT have full time power. No pullup | See Setup Wizard Page "LowSide Assignment Tables" for output assignment and 2D table "LS5_Duty [%]" for activation. |
| C1-3 | LowsideSwitch_6_Out | Lowside switch, 4A max with internal flyback diode. Inductive load should NOT have full time power. No pullup | See Setup Wizard Page "LowSide Assignment Tables" for output assignment and 2D table "LS6_Duty [%]" for activation. |
| C1-4 | UEGO 1 Heat_Out | 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_In | | Trim Current signal. Connect to pin 2 of Bosch UEGO sensor |
| C1-6 | UEGO 1 IP_In | | Pumping Current signal. Connect to pin 6 of Bosch UEGO sensor |
| C1-7 | UEGO 1 UN_In | | Nernst Voltage signal. Connect to pin 1 of Bosch UEGO sensor |
| C1-8 | UEGO 1 VM_In | | Virtual Ground signal. Connect to pin 5 of Bosch UEGO sensor. |
| C1-9 | Flash_Enable_In | 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_In | 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_Out | 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 | Hrdwr Ref. | Hardware Specification | Notes |
|--------------|------------------------------------|--|--|
| C1-12 | Coil 3_Out | 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_Out | 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_Out | 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_Out | 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_Out | 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_Out | Lowside switch, 4A max, NO internal flyback diode. No pullup | See Setup Wizard Pages "User GPOs" for activation criteria and "LowSide Assignment Tables" for output assignment |
| C1-18 | LowsideSwitch_3_Out | Lowside switch, 4A max with internal flyback diode. Inductive load should NOT have full time power. No pullup | Normally used as MIL output. See Wizard page "LowSide Assignment Tables" for output assignment. |
| C1-19 | AGND_1_Out | Dedicated analog ground | Analog 0-5V sensor ground |
| C1-20 | AGND_1_Out | Dedicated analog ground | Analog 0-5V sensor ground |
| C1-21 | Crankshaft Position Sensor Hall_In | 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_In | 10K pullup to 12V. Will work with ground or floating switches. | See Setup Wizard page Cam/Crank for options. |
| C1-23 | Digital_In_2 | 10K pullup to 12V. Will work with ground or floating switches. | See Setup Wizard page Cam/Crank for options. |

| Infinity Pin | Hrdwr Ref. | Hardware Specification | Notes |
|--------------|------------------------|--|---|
| C1-24 | Digital_In_3 | 10K pullup to 12V. Will work with ground or floating switches. | See Setup Wizard page Turbo Speed for calibration constant. |
| C1-25 | Digital_In_4 | 10K pullup to 12V. Will work with ground or floating switches. | See Setup Wizard page Vehicle Speed for calibration constant. |
| C1-26 | Digital_In_5 | 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_In | Dedicated knock signal processor | See Setup Wizard page Knock Setup for options. |
| C1-28 | Knock Sensor 2_In | Dedicated knock signal processor | See Setup Wizard page Knock Setup for options. |
| C1-29 | +12V_Relay_Control_Out | 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_In | Power Ground | Connect directly to battery ground |
| C1-31 | CANL_A_Out | Dedicated High Speed CAN Transceiver | Recommend twisted pair (one twist per 2") with terminating resistor. Contact AEM for additional information. |
| C1-32 | CANH_A_Out | Dedicated High Speed CAN Transceiver | Recommend twisted pair (one twist per 2") with terminating resistor. Contact AEM for additional information. |
| C1-33 | LowsideSwitch_1_Out | Lowside switch, 4A max with internal flyback diode. Inductive load should NOT have full time power. No pullup | See Setup Wizard page Boost Control for options. Monitor BoostControl [%] channel for output state. |
| C1-34 | LowsideSwitch_0_Out | 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. |
| C1-35 | Analog_In_7 | 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. |

| Infinity Pin | Hrdwr Ref. | Hardware Specification | Notes |
|--------------|-----------------------------------|---|--|
| C1-36 | Analog_In_8 | 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. |
| C1-37 | Analog_In_9 | 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. |
| C1-38 | Analog_In_10 | 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. |
| C1-39 | Analog_In_11 | 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. Normally used as Shift Switch input. |
| C1-40 | Analog_In_12 | 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. Normally used as Mode Switch input. |
| C1-41 | +5V_Out_1 | Regulated, fused +5V supply for sensor power | Analog sensor power |
| C1-42 | +5V_Out_1 | Regulated, fused +5V supply for sensor power | Analog sensor power |
| C1-43 | HighsideSwitch_1_Out | 0.7A max, High Side Solid State Relay | See Setup Wizard page 'HighSide Assignment Tables' for configuration options. |
| C1-44 | HighsideSwitch_0_Out | 0.7A max, High Side Solid State Relay | See Setup Wizard page 'HighSide Assignment Tables' for configuration options. |
| C1-45 | Crankshaft Position Sensor VR+_In | Differential Variable Reluctance Zero Cross Detection | See Setup Wizard page Cam/Crank for options. |
| C1-46 | Crankshaft Position Sensor VR_-In | | See Setup Wizard page Cam/Crank for options. |

| Infinity Pin | Hrdwr Ref. | Hardware Specification | Notes |
|--------------|-----------------------------------|---|---|
| C1-47 | Camshaft Position Sensor 1 VR-_In | Differential Variable Reluctance Zero Cross Detection | See Setup Wizard page Cam/Crank for options. |
| C1-48 | Camshaft Position Sensor 1 VR+_In | | See Setup Wizard page Cam/Crank for options. |
| C1-49 | VR+_In_2 | Differential Variable Reluctance Zero Cross Detection | See Non Driven Wheel Speed Calibration in the Setup Wizard Vehicle Speed page. |
| C1-50 | VR-_In_2 | | |
| C1-51 | VR-_In_3 | Differential Variable Reluctance Zero Cross Detection | See Driven Wheel Speed Calibration in the Setup Wizard Vehicle Speed page. |
| C1-52 | VR+_In_3 | | |
| C1-53 | DBW1 Motor -_Out | 5.0A max Throttle Control Hbridge Drive | +12V to close. |
| C1-54 | DBW1 Motor +_Out | 5.0A max Throttle Control Hbridge Drive | +12V to open. |
| C1-55 | Power Ground_In | Power Ground | Connect directly to battery ground |
| C1-56 | Injector 6_Out | Saturated or peak and hold, 3A max continuous | Injector 6 |
| C1-57 | Injector 5_Out | Saturated or peak and hold, 3A max continuous | Injector 5 |
| C1-58 | Injector 4_Out | Saturated or peak and hold, 3A max continuous | Injector 4 |
| C1-59 | Injector 3_Out | Saturated or peak and hold, 3A max continuous | Injector 3 |
| C1-60 | Power Ground_In | Power Ground | Connect directly to battery ground |
| C1-61 | +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. |
| C1-62 | Injector 2_Out | Saturated or peak and hold, 3A max continuous | Injector 2 |
| C1-63 | Injector 1_Out | Saturated or peak and hold, 3A max continuous | Injector 1 |
| C1-64 | +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_In | 10K pulldown | Full time battery power must be available at C1-10 before this input is triggered. |

| Infinity Pin | Hrdwr Ref. | Hardware Specification | Notes |
|--------------|------------------|---|---|
| C1-66 | Analog_In_Temp_1 | 12 bit A/D, 2.49K pullup to 5V | See "Coolant Temperature" Setup Wizard for selection. |
| C1-67 | Analog_In_Temp_2 | 12 bit A/D, 2.49K pullup to 5V | See "Air Temperature" Setup Wizard for selection. |
| C1-68 | Analog_In_Temp_3 | 12 bit A/D, 2.49K pullup to 5V | Normally used for Oil Temp input. |
| C1-69 | Stepper_2A_Out | Automotive, Programmable Stepper Driver, up to 28V and $\pm 1.4A$ | Be sure that each internal coil of the stepper motor are properly paired with the 1A/1B and 2A/2B ECU outputs. Supports Bi-Polar stepper motors only. |
| C1-70 | Stepper_1A_Out | Automotive, Programmable Stepper Driver, up to 28V and $\pm 1.4A$ | Be sure that each internal coil of the stepper motor are properly paired with the 1A/1B and 2A/2B ECU outputs. Supports Bi-Polar stepper motors only. |
| C1-71 | Stepper_2B_Out | Automotive, Programmable Stepper Driver, up to 28V and $\pm 1.4A$ | Be sure that each internal coil of the stepper motor are properly paired with the 1A/1B and 2A/2B ECU outputs. Supports Bi-Polar stepper motors only. |
| C1-72 | Stepper_1B | Automotive, Programmable Stepper Driver, up to 28V and $\pm 1.4A$ | Be sure that each internal coil of the stepper motor are properly paired with the 1A/1B and 2A/2B ECU outputs. Supports Bi-Polar stepper motors only. |
| C1-73 | Power Ground_In | Power Ground | Connect directly to battery ground |
| C2-1 | DBW2 Motor +_Out | 5.0A max Throttle Control Hbridge Drive | +12V to open. |
| C2-2 | DBW2 Motor -_Out | 5.0A max Throttle Control Hbridge Drive | +12V to close. |
| C2-3 | Power Ground_In | Power Ground | Connect directly to battery ground |
| C2-4 | Injector 7_Out | Saturated or peak and hold, 3A max continuous | Injector 7 |
| C2-5 | Injector 8_Out | Saturated or peak and hold, 3A max continuous | Injector 8 |
| C2-6 | Injector 9_Out | Saturated or peak and hold, 3A max continuous | Injector 9. |
| C2-7 | Injector 10_Out | Saturated or peak and hold, 3A max continuous | Injector 10. |
| C2-8 | Power Ground_In | Power Ground | Connect directly to battery ground. |

| Infinity Pin | Hrdwr Ref. | Hardware Specification | Notes |
|--------------|------------------|---|--|
| C2-9 | +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. |
| C2-10 | Injector 11_Out | Saturated or peak and hold, 3A max continuous | Not used |
| C2-11 | Injector 12_Out | Saturated or peak and hold, 3A max continuous | Not used |
| C2-12 | Analog_In_17 | 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. Normally used as A/C Analog Request input. |
| C2-13 | Analog_In_18 | 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. Normally used as DBW APP1. |
| C2-14 | Analog_In_19 | 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. Normally used as DBW APP2. |
| C2-15 | Analog_In_Temp_4 | 12 bit A/D, 2.49K pullup to 5V | Normally used as Charge Out Temperature input. |
| C2-16 | Analog_In_Temp_5 | 12 bit A/D, 2.49K pullup to 5V | Normally used as Airbox Temperature input. |
| C2-17 | Analog_In_Temp_6 | 12 bit A/D, 2.49K pullup to 5V | Normally used as Fuel Temperature input. |
| C2-18 | Analog_In_13 | 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. |

| Infinity Pin | Hrdwr Ref. | Hardware Specification | Notes |
|--------------|---------------------|--|---|
| C2-19 | Analog_In_14 | 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. |
| C2-20 | Analog_In_15 | 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. Normally used as Exhaust Back Pressure input. |
| C2-21 | Analog_In_16 | 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. Normally used as DBW1_TPSB input. |
| C2-22 | +5V_Out_2 | Regulated, fused +5V supply for sensor power | Analog sensor power |
| C2-23 | +5V_Out_2 | Regulated, fused +5V supply for sensor power | Analog sensor power |
| C2-24 | +5V_Out_2 | Regulated, fused +5V supply for sensor power | Analog sensor power |
| C2-25 | VR+_In_5 | Differential Variable Reluctance Zero Cross Detection | See Driven Wheel Speed Calibration in the Setup Wizard Vehicle Speed page. |
| C2-26 | VR-_In_5 | | |
| C2-27 | VR-_In_4 | Differential Variable Reluctance Zero Cross Detection | See Non Driven Wheel Speed Calibration in the Setup Wizard Vehicle Speed page. |
| C2-28 | VR+_In_4 | | |
| C2-29 | LowsideSwitch_9_Out | Lowside switch, 4A max with internal flyback diode, 2.2K 12V pullup. Inductive load should NOT have full time power. 12V pullup | See Setup Wizard page Tacho for configuration options. |
| C2-30 | AGND_2_Out | Dedicated analog ground | Analog 0-5V sensor ground |

| Infinity Pin | Hrdwr Ref. | Hardware Specification | Notes |
|--------------|-----------------|--|--|
| C2-31 | AGND_2_Out | Dedicated analog ground | Analog 0-5V sensor ground |
| C2-32 | AGND_2_Out | Dedicated analog ground | Analog 0-5V sensor ground |
| C2-33 | Analog_In_20 | 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 | 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. Normally used as 3 Step Enable Switch input. |
| C2-35 | Analog_In_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. Normally used as USB Logging Request input. |
| C2-36 | Analog_In_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. Normally used as Charge Out Pressure input. |
| C2-37 | Digital_In_6 | 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 | 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_In | Power Ground | Connect directly to battery ground |
| C2-40 | Power Ground_In | Power Ground | Connect directly to battery ground |

| Infinity Pin | Hrdwr Ref. | Hardware Specification | Notes |
|--------------|---------------------|---|---|
| C2-41 | CanH_B_Out | Dedicated High Speed CAN Transceiver | Not used |
| C2-42 | CanL_B_Out | Dedicated High Speed CAN Transceiver | Not used |
| C2-43 | LowsideSwitch_8_Out | Lowside switch, 4A max with internal flyback diode. Inductive load should NOT have full time power. 12V pullup | 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_Out | Lowside switch, 4A max with internal flyback diode. Inductive load should NOT have full time power. No pullup | Normally used as Spare GPO1 output. |
| C2-45 | UEGO 2 VM_In | Bosch UEGO Controller | Virtual Ground signal. Connect to pin 5 of Bosch UEGO sensor. |
| C2-46 | UEGO 2 UN_In | | Nernst Voltage signal. Connect to pin 1 of Bosch UEGO sensor |
| C2-47 | UEGO 2 IP_In | | Pumping Current signal. Connect to pin 6 of Bosch UEGO sensor |
| C2-48 | UEGO 2 IA_In | | Trim Current signal. Connect to pin 2 of Bosch UEGO sensor |
| C2-49 | UEGO 2 HEAT_Out | | 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_In | Dedicated power management CPU | Full time battery power. MUST be powered before the ignition switch input is triggered (See C1-65). |
| C2-51 | Coil 7_Out | 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_Out | 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_Out | 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 | Hrdwr Ref. | Hardware Specification | Notes |
|--------------|-------------------------------|--|--|
| C2-54 | Coil 10_Out | 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. |
| C2-55 | Highside Fuel Pump Switch_Out | Highside switch, 0.7A max, Solid State Relay, NO internal flyback diode. | +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 |

2.3 Universal Pinout, Infinity-6/8h

| Infinity Pin | Hardware Ref. | Hardware Specification | Notes |
|--------------|--|---|--|
| C1-1 | LowsideSwitch_4_Out | Lowside switch, 1.7A max, NO internal flyback diode. 12V pullup | See Setup Wizard Pages "User GPOs" for activation criteria and "LowSide Assignment Tables" for output assignment |
| C1-2 | LowsideSwitch_5_Out | Lowside switch, 6A max with internal flyback diode. Inductive load should NOT have full time power. 12V pullup | See Setup Wizard Page "LowSide Assignment Tables" for output assignment and 2D table "LS5_Duty [%]" for activation. |
| C1-3* | LowsideSwitch_6_Out (*Infinity-6 Only) | Lowside switch, 6A max with internal flyback diode. Inductive load should NOT have full time power. No pullup | Available on P/N 30-7106 only. See Setup Wizard Page "LowSide Assignment Tables" for output assignment and 2D table "LS6_Duty [%]" for activation. |
| C1-3** | Injector 7_Out (**Infinity-8H Only) | For use with high impedance (10-15 ohms) injectors only, 1.7A max. | Available on P/N 30-7108 only |
| C1-4* | LowsideSwitch_7_Out (*Infinity-6 Only) | Lowside switch, 6A max, NO internal flyback diode. No pullup | Available on P/N 30-7106 only. See Setup Wizard Page "LowSide Assignment Tables" for output assignment and 2D table "LS7_Duty [%]" for activation. |
| C1-4** | Injector 8_Out (**Infinity-8H Only) | For use with high impedance (10-15 ohms) injectors only, 1.7A max. | Available on P/N 30-7108 only |
| C1-5 | UEGO1 Heat_Out | 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. |
| C1-6 | UEGO1 IA_In | | Trim Current signal. Connect to pin 2 of Bosch UEGO sensor |
| C1-7 | UEGO1 IP_In | | Pumping Current signal. Connect to pin 6 of Bosch UEGO sensor |
| C1-8 | UEGO1 UN_In | | Nernst Voltage signal. Connect to pin 1 of Bosch UEGO sensor |
| C1-9 | UEGO1 VM_In | | Virtual Ground signal. Connect to pin 5 of Bosch UEGO sensor. |
| C1-10 | +12V_R8C_CPU_In | 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_Out | 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_Out | 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_Out | 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_Out | 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 Ref. | Hardware Specification | Notes |
|--------------|------------------------------------|--|---|
| C1-15 | Coil 6_Out | 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_Out | 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 | Crankshaft Position Sensor VR+_In | Differential Variable Reluctance Zero Cross Detection | See Setup Wizard page Cam/Crank for options. |
| C1-18 | Crankshaft Position Sensor VR-_In | | See Setup Wizard page Cam/Crank for options. |
| C1-19 | Camshaft Position Sensor 1 VR-_In | Differential Variable Reluctance Zero Cross Detection | See Setup Wizard page Cam/Crank for options. |
| C1-20 | Camshaft Position Sensor 1 VR+_In | | See Setup Wizard page Cam/Crank for options. |
| C1-21 | LowsideSwitch_2_Out | Lowside switch, 1.7A max, NO internal flyback diode. No pullup | See Setup Wizard Pages "User GPOs" for activation criteria and "LowSide Assignment Tables" for output assignment |
| C1-22 | LowsideSwitch_3_Out | Lowside switch, 6A max with internal flyback diode. Inductive load should NOT have full time power. No pullup | 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. |
| C1-23 | AGND_1_Out | Dedicated analog ground | Analog 0-5V sensor ground |
| C1-24 | AGND_1_Out | Dedicated analog ground | Analog 0-5V sensor ground |
| C1-25 | Crankshaft Position Sensor Hall_In | 10K pullup to 12V. Will work with ground or floating switches. | See Setup Wizard page Cam/Crank for options. |
| C1-26 | Camshaft Position Sensor 1 Hall_In | 10K pullup to 12V. Will work with ground or floating switches. | See Setup Wizard page Cam/Crank for options. |
| C1-27 | Digital_In_2 | 10K pullup to 12V. Will work with ground or floating switches. | See Setup Wizard page Cam/Crank for options. |
| C1-28 | Dig3 [Hz] / Dig3_Duty_In | 10K pullup to 12V. Will work with ground or floating switches. | Frequency input can be assigned to Wheel Speed, TurboSpeed, Flex Fuel or other functions. See Setup Wizard page Input Function Assignments for mapping options. |
| C1-29 | Dig4 [Hz] / Dig4_Duty_In | 10K pullup to 12V. Will work with ground or floating switches. | See Setup Wizard page Vehicle Speed for calibration constant. |
| C1-29 | RS232 Rx_In | RS232 Line Driver/Receiver | Future expansion |
| C1-30 | Digital_In_5 | 10K pullup to 12V. Will work with ground or floating switches. | 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. |
| C1-30 | RS232 Tx_Out | RS232 Line Driver/Receiver | Future expansion |

| Infinity Pin | Hardware Ref. | Hardware Specification | Notes |
|--------------|--|--|--|
| | | | |
| C1-31* | Dig6 [Hz] / Dig6_Duty_In (*Infinity-6 Only) | 10K pullup to 12V. Will work with ground or floating switches. | Available on P/N 30-7106 only. Frequency input can be assigned to Wheel Speed, TurboSpeed, Flex Fuel or other functions. See Setup Wizard page Input Function Assignments for mapping options. |
| C1-31** | Coil 7_Out (**Infinity-8H Only) | 25 mA max source current | Available on P/N 30-7108 only. 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. |
| C1-32* | Digital_In_7 (*Infinity-6 Only) | 10K pullup to 12V. Will work with ground or floating switches. | Available on P/N 30-7106 only. Input can be assigned to different pins. See Setup Wizard page Input Function Assignments for input mapping options. |
| C1-32** | Coil 8_Out (**Infinity-8H Only) | 25 mA max source current | Available on P/N 30-7108 only. 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. |
| C1-33 | Power Ground_In | Power Ground | Connect directly to battery ground |
| C1-34 | CANL_A_Out | Dedicated High Speed CAN Transceiver | Recommend twisted pair (one twist per 2") with terminating resistor. Contact AEM for additional information. |
| C1-35 | CANH_A_Out | Dedicated High Speed CAN Transceiver | Recommend twisted pair (one twist per 2") with terminating resistor. Contact AEM for additional information. |
| C1-36 | CanL_B_Out | Dedicated High Speed CAN Transceiver | Not used, reserved for future expansion. |
| C1-37 | CanH_B_Out | Dedicated High Speed CAN Transceiver | Not used, reserved for future expansion. |
| C1-38 | Analog_In_Temp_1 | 12 bit A/D, 2.49K pullup to 5V | See "Coolant Temperature" Setup Wizard for selection. |
| C1-39 | Analog_In_Temp_2 | 12 bit A/D, 2.49K pullup to 5V | See "Air Temperature" Setup Wizard for selection. |
| C1-40 | Analog_In_Temp_3 | 12 bit A/D, 2.49K pullup to 5V | See 1D table OilTempCal table for calibration data and OilTemp [C] for channel data. |
| C1-41 | Lowside Fuel Pump drive_Out | Lowside switch, 1.7A 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_In | Lowside switch, 6A max with internal flyback diode. Inductive load should NOT have full time power. No pullup | See Setup Wizard page Boost Control for options. Monitor BoostControl [%] channel for output state. |
| C1-43 | Power Ground_In | Power Ground | Connect directly to battery ground |
| C1-44 | Knock Sensor 1_In | Dedicated knock signal processor | See Setup Wizard page Knock Setup for |

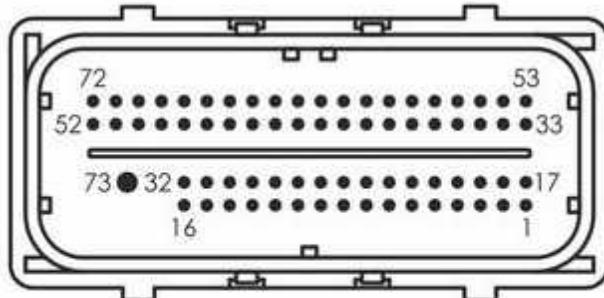
| Infinity Pin | Hardware Ref. | Hardware Specification | Notes |
|--------------|------------------------|--|---|
| | | | options. |
| C1-45 | Knock Sensor 2_In | Dedicated knock signal processor | See Setup Wizard page Knock Setup for options. |
| C1-46 | Power Ground_In | Power Ground | Connect directly to battery ground |
| C1-47 | +12V_Relay_Control_Out | 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 | +12V_SW_In | 10K pulldown | Full time battery power must be available at C1-10 before this input is triggered. |
| C1-49 | +5V_Out_1 | Regulated, fused +5V supply for sensor power | Analog sensor power |
| C1-50 | +5V_Out_1 | Regulated, fused +5V supply for sensor power | Analog sensor power |
| C1-51 | Analog_In_7 | 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. |
| C1-52 | Analog_In_8 | 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. |
| C1-53 | Analog_In_9 | 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. |
| C1-54 | VR+_In_2 | Differential Variable Reluctance Zero Cross Detection | See Non Driven Wheel Speed Calibration in the Setup Wizard Vehicle Speed page. |
| C1-55 | VR_-In_2 | | |
| C1-56 | VR_-In_3 | Differential Variable Reluctance Zero Cross Detection | See Driven Wheel Speed Calibration in the Setup Wizard Vehicle Speed page. |
| C1-57 | VR+_In_3 | | |
| C1-58 | HighsideSwitch_0_Out | 2.6A max, High Side Solid State Relay | See Setup Wizard page 'HighSide Assignment Tables' for configuration options. See 2D lookup table 'HS0_Table' for activation settings. See Setup Wizard page 'VTEC' for default activation criteria. |
| C1-59 | Stepper_1B_Out | Automotive, Programmable Stepper Driver, up to 28V and ±1.4A | Be sure that each internal coil of the stepper motor are properly paired with the 1A/1B and 2A/2B ECU outputs. Supports Bi-Polar stepper |

| Infinity Pin | Hardware Ref. | Hardware Specification | Notes |
|--------------|------------------|---|---|
| | | | motors only. |
| C1-60 | Stepper_2B_Out | Automotive, Programmable Stepper Driver, up to 28V and $\pm 1.4A$ | Be sure that each internal coil of the stepper motor are properly paired with the 1A/1B and 2A/2B ECU outputs. Supports Bi-Polar stepper motors only. |
| C1-61 | DBW1 Motor _Out | 5.0A max Throttle Control Hbridge Drive | +12V to close |
| C1-62 | DBW1 Motor +_Out | 5.0A max Throttle Control Hbridge Drive | +12V to open |
| C1-63 | +12V_In | 12 volt power from relay | 12 volt power from relay. Relay must be controlled by +12V Relay Control signal, pin C1-47 above. |
| C1-64 | Injector 6_Out | Saturated (P/N 30-7108) or peak and hold, 3A max continuous (P/N 30-7106) | Injector 6 |
| C1-65 | Injector 5_Out | Saturated (P/N 30-7108) or peak and hold, 3A max continuous (P/N 30-7106) | Injector 5 |
| C1-66 | Injector 4_Out | Saturated (P/N 30-7108) or peak and hold, 3A max continuous (P/N 30-7106) | Injector 4 |
| C1-67 | Power Ground_In | Power Ground | Connect directly to battery ground |
| C1-68 | +12V_In | 12 volt power from relay | 12 volt power from relay. Relay must be controlled by +12V Relay Control signal, pin C1-47 above. |
| C1-69 | Analog_In_19 | 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. |
| C1-70 | Analog_In_18 | 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. |
| C1-71 | Analog_In_16 | 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. |
| C1-72 | Flash_Enable_In | 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. |
| C1-73 | Analog_In_13 | 12 bit A/D, 100K pullup to 5V | 0-5V analog signal. Use +5V Out pins as power |

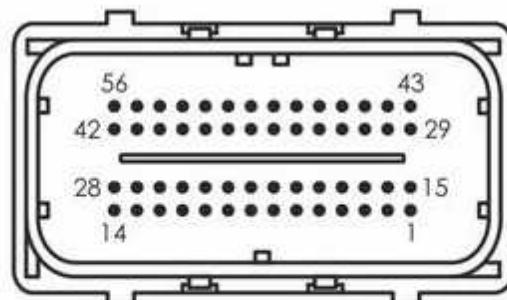
| Infinity Pin | Hardware Ref. | Hardware Specification | Notes |
|--------------|----------------|---|--|
| | | | supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU. See Setup Wizard Oil Pressure page for setup options. See OilPressure [psig] for channel data. |
| C1-74 | Analog_In_11 | 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. |
| C1-75 | Analog_In_10 | 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. |
| C1-76 | Injector 3_Out | Saturated (P/N 30-7108) or peak and hold, 3A max continuous (P/N 30-7106) | Injector 3 |
| C1-77 | Injector 2_Out | Saturated (P/N 30-7108) or peak and hold, 3A max continuous (P/N 30-7106) | Injector 2 |
| C1-78 | Injector 1_Out | Saturated (P/N 30-7108) or peak and hold, 3A max continuous (P/N 30-7106) | Injector 1 |
| C1-79 | Stepper_2A_Out | Automotive, Programmable Stepper Driver, up to 28V and ±1.4A | Be sure that each internal coil of the stepper motor are properly paired with the 1A/1B and 2A/2B ECU outputs. Supports Bi-Polar stepper motors only. |
| C1-80 | Stepper_1A_Out | Automotive, Programmable Stepper Driver, up to 28V and ±1.4A | Be sure that each internal coil of the stepper motor are properly paired with the 1A/1B and 2A/2B ECU outputs. Supports Bi-Polar stepper motors only. |

2.4 Connector Views

Infinity-8/10/12 ECU Connectors

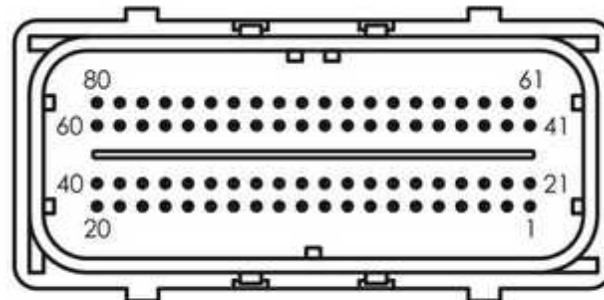


INFINITY "C1" 73 PIN



INFINITY "C2" 56 PIN

Infinity-6/8h ECU Connector



INFINITY "C1" 80 PIN

2.5 Example System Schematics

Custom wiring harness projects should only be undertaken by experienced harness builders. If in doubt, please contact AEM for recommendations.

For users wishing to build their own wiring harnesses from scratch, the following kits are available to help.

30-3701 Infinity-8/10/12 Plug & Pin Kit

Bare necessities to begin a custom wire harness design. Includes 73 and 56 pin Molex MX123 harness connectors, terminals and sealing plugs, main relay and relay socket.

30-3702 Infinity-8/10/12 Mini-harness

This harness is intended to be used as a starting point by experienced harness builders. It saves time by including basic power distribution features that can be expanded to suit many application requirements. It allows the harness builder to populate the ECU connector with only the features needed by the application. Includes 100 96" pre-terminated leads.

30-3703 Infinity-8/10/12 Mini-harness

This harness is intended to be used as a starting point by experienced harness builders. It saves time by including basic power distribution features that can be expanded to suit many application requirements. It allows the harness builder to populate the ECU connector with only the features needed by the application.

30-3704 Infinity-6/8h Plug & Pin Kit

Bare necessities to begin a custom wire harness design. Includes 80 pin Molex MX123 harness connector, terminals and sealing plugs, main relay and relay socket.

30-3805 Universal modular V8 harness system for Infinity-8/10 systems

The Infinity Universal Modular V8 Harness system consists of a universal core harness and optional application specific extensions. It was designed with flexibility in mind. The harness system includes many features and it can be used in many different applications.

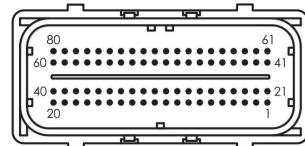
30-3705 Universal Mini Harness for Infinity-6/8h systems

This harness is intended to be used as a starting point by experienced harness builders. It saves time by including basic power distribution features that can be expanded to suit many application requirements. It allows the harness builder to populate the ECU connector with only the features needed by the application.

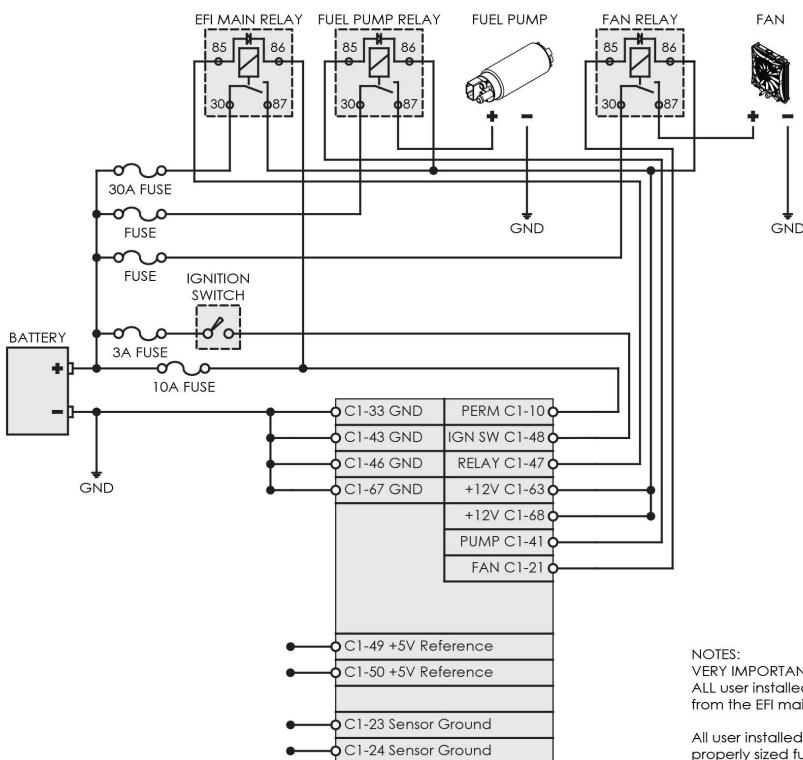
The following schematics show examples for wiring a basic Infinity system. Examples are included for both Infinity-6/8h and Infinity-8/10/12 hardware platforms. ***The power, ground and accessory relay sections of the following schematics must be strictly followed to avoid inconsistent power sequencing and possible ECU damage.***

2.5.1 Power Distribution, Infinity-6/8h

| NAME | FUNCTION |
|---------------|--|
| GND | Battery ground |
| PERM | Fused connection to battery positive terminal (+12V, always hot) |
| IGN SW | Fused connection to vehicle ignition switch (+12V in RUN/CRANK only) |
| RELAY | Switched ground from ECU connected to relay coil primary negative |
| +12V | Relay driven +12V power source for ECU power and auxiliary outputs |
| +5V Reference | +5V supplied by ECU |
| Sensor Ground | Analog ground used as ground point for sensors |



INFINITY "C1" 80 PIN



NOTES:
VERY IMPORTANT
ALL user installed auxilliary relays must be powered by the output from the EFI main relay.

All user installed auxilliary circuits should be protected with a properly sized fuse as shown.

Relays with internal diodes must have the anode side of the coil connected to the ECU.



Drawing: Power Distribution

ECU: Infinity-6/8h

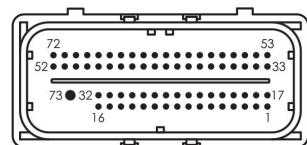
Date: 08/05/2014

Rev: A

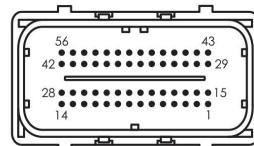
Engineer: Nakano

2.5.2 Power Distribution, Infinity-8/10/12

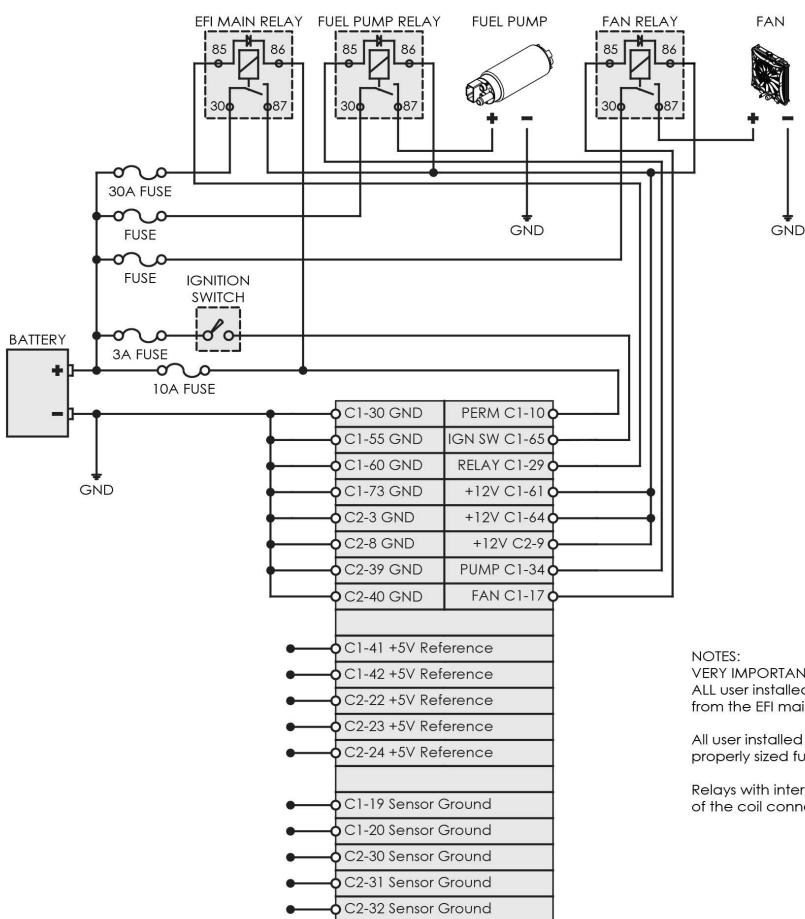
| NAME | FUNCTION |
|---------------|--|
| GND | Battery ground |
| PERM | Fused connection to battery positive terminal (+12V, always hot) |
| IGN SW | Fused connection to vehicle ignition switch (+12V in RUN/CRANK only) |
| RELAY | Switched ground from ECU connected to relay coil primary negative |
| +12V | Relay driven +12V power source for ECU power and auxiliary outputs |
| +5V Reference | +5V supplied by ECU |
| Sensor Ground | Analog ground used as ground point for sensors |



INFINITY "C1" 73 PIN



INFINITY "C2" 56 PIN



Drawing: Power Distribution

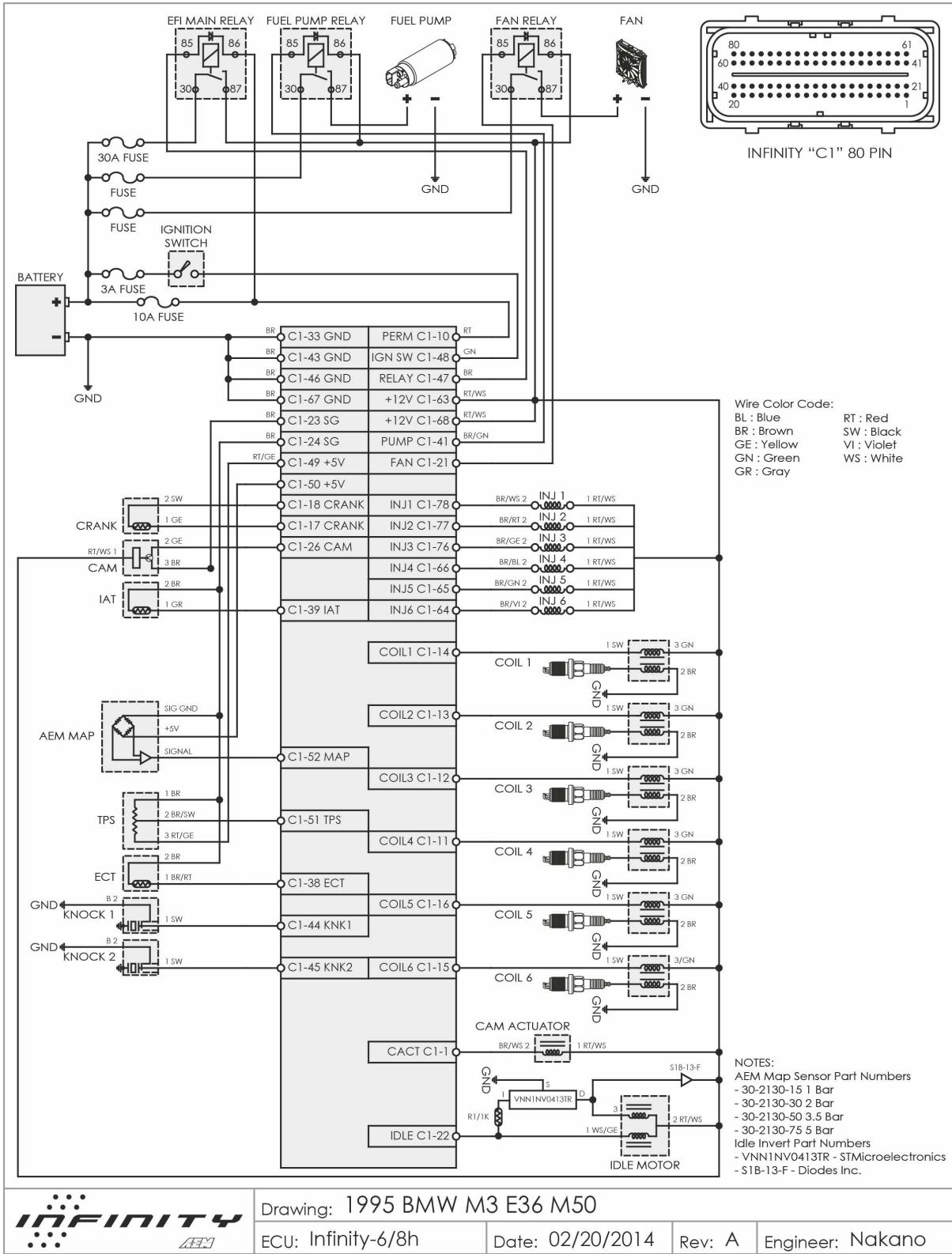
ECU: Infinity-8/10/12

Date: 08/05/2014

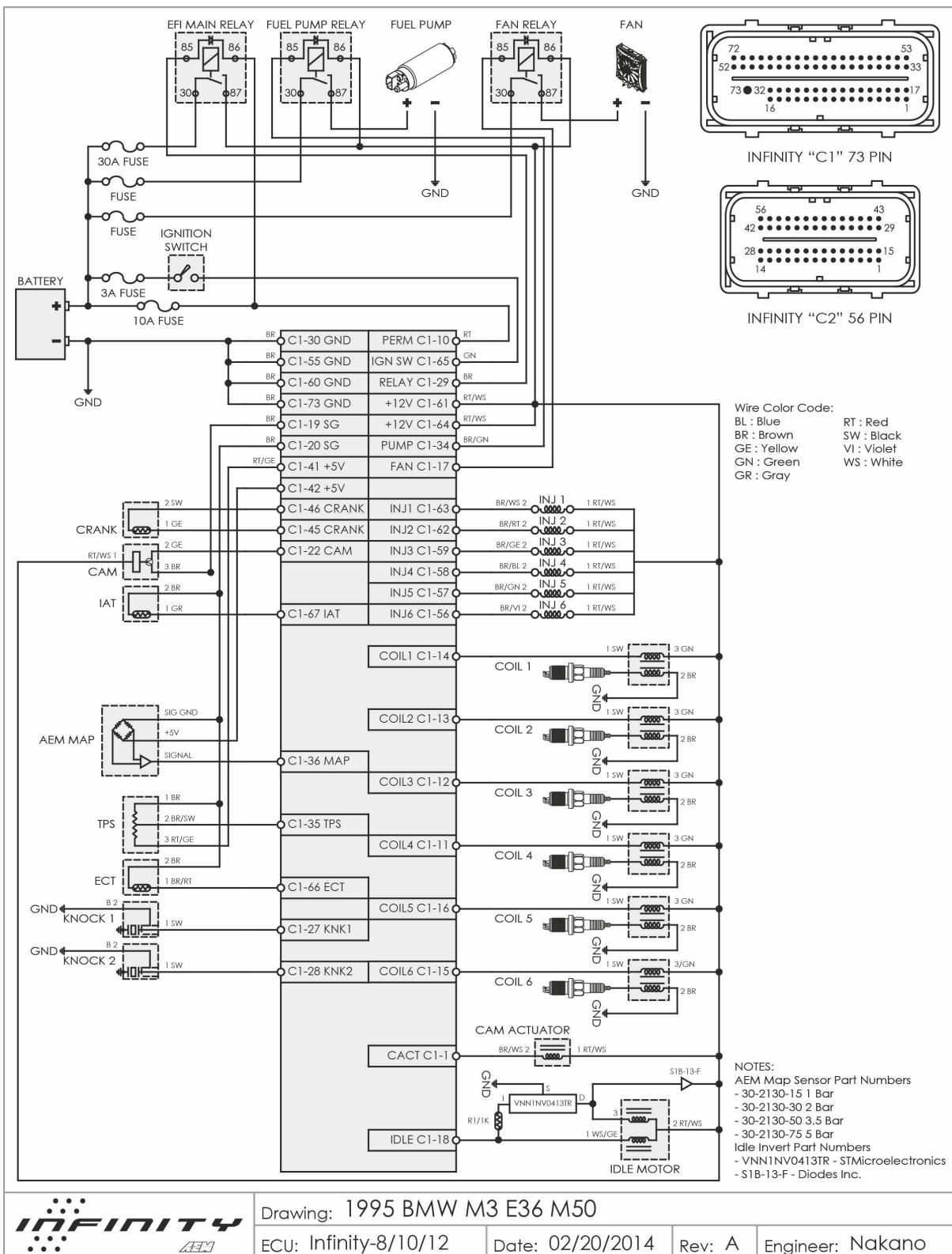
Rev: A

Engineer: Nakano

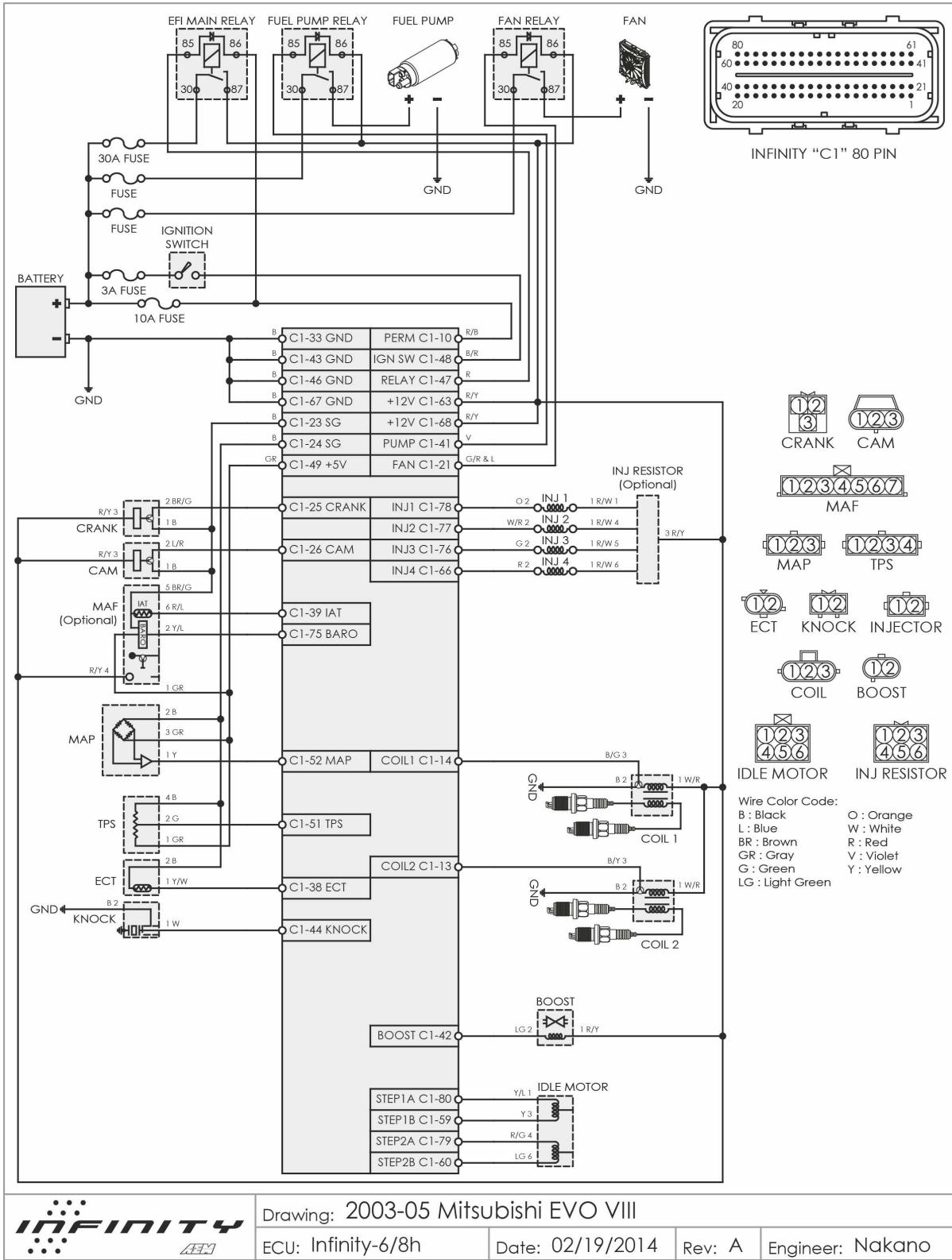
2.5.3 95 BMW E36 M3, Infinity-6/8h



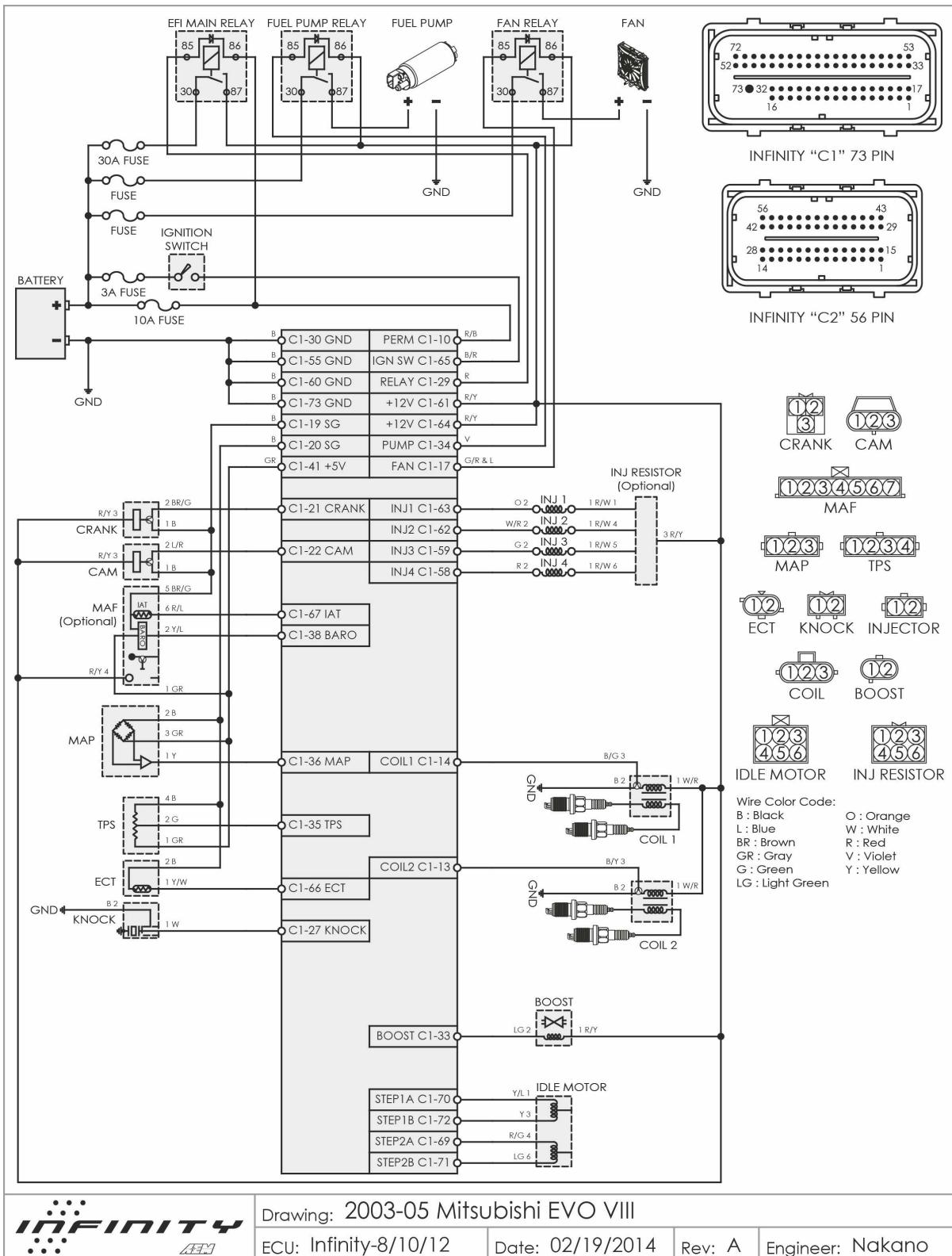
2.5.4 95 BMW E36 M3, Infinity-8/10/12



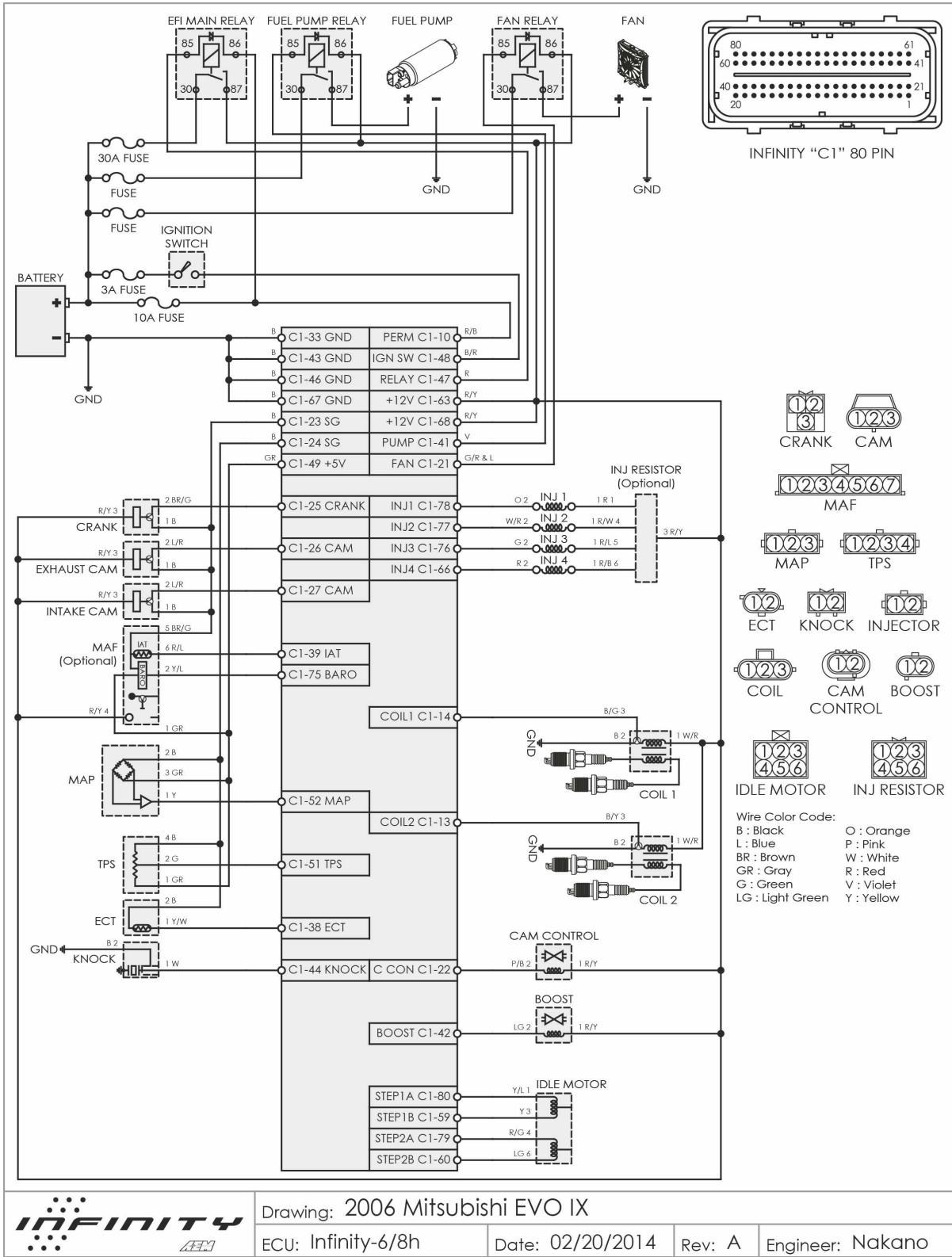
2.5.5 EVO VIII, Infinity-6/8h



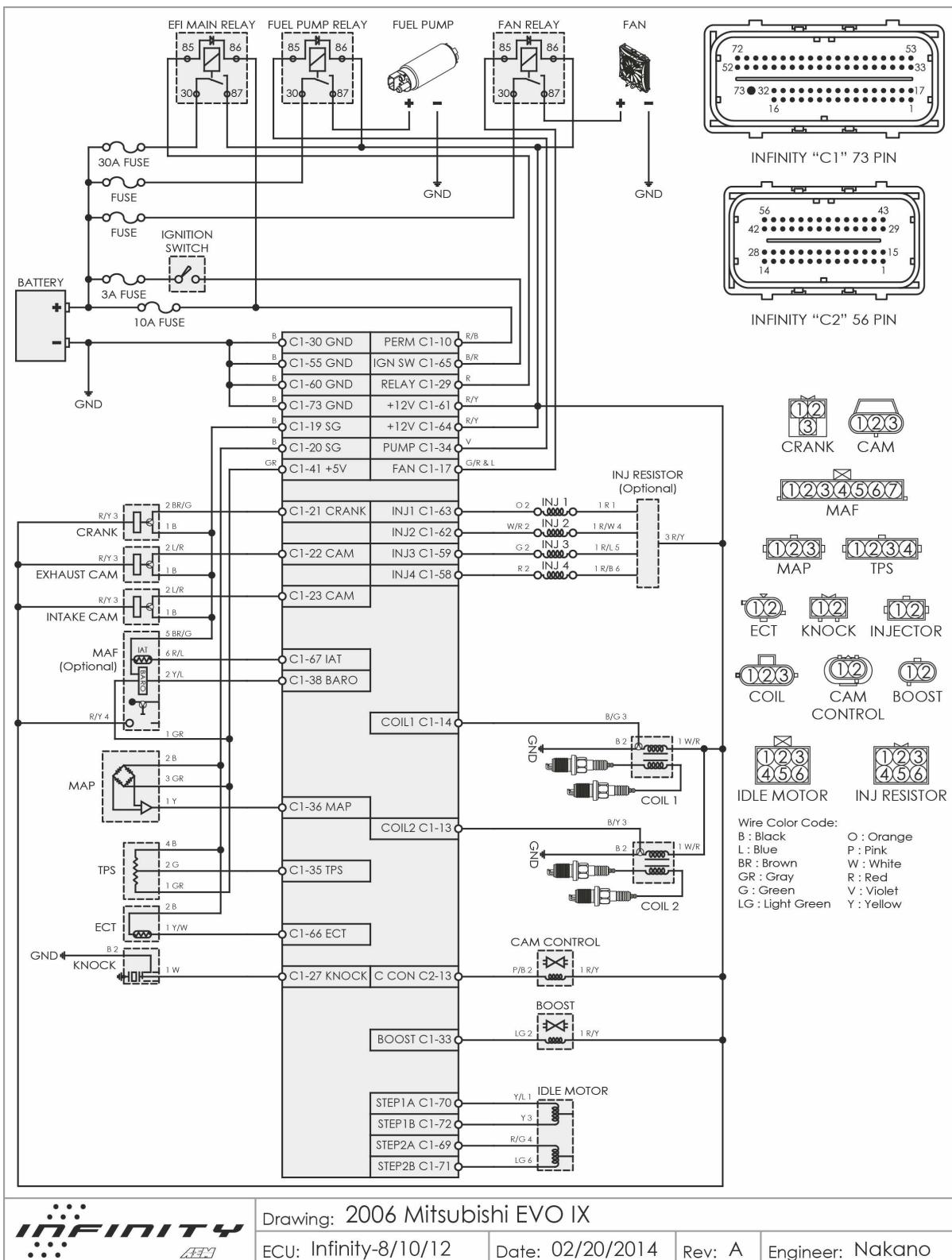
2.5.6 EVO VIII, Infinity-8/10/12



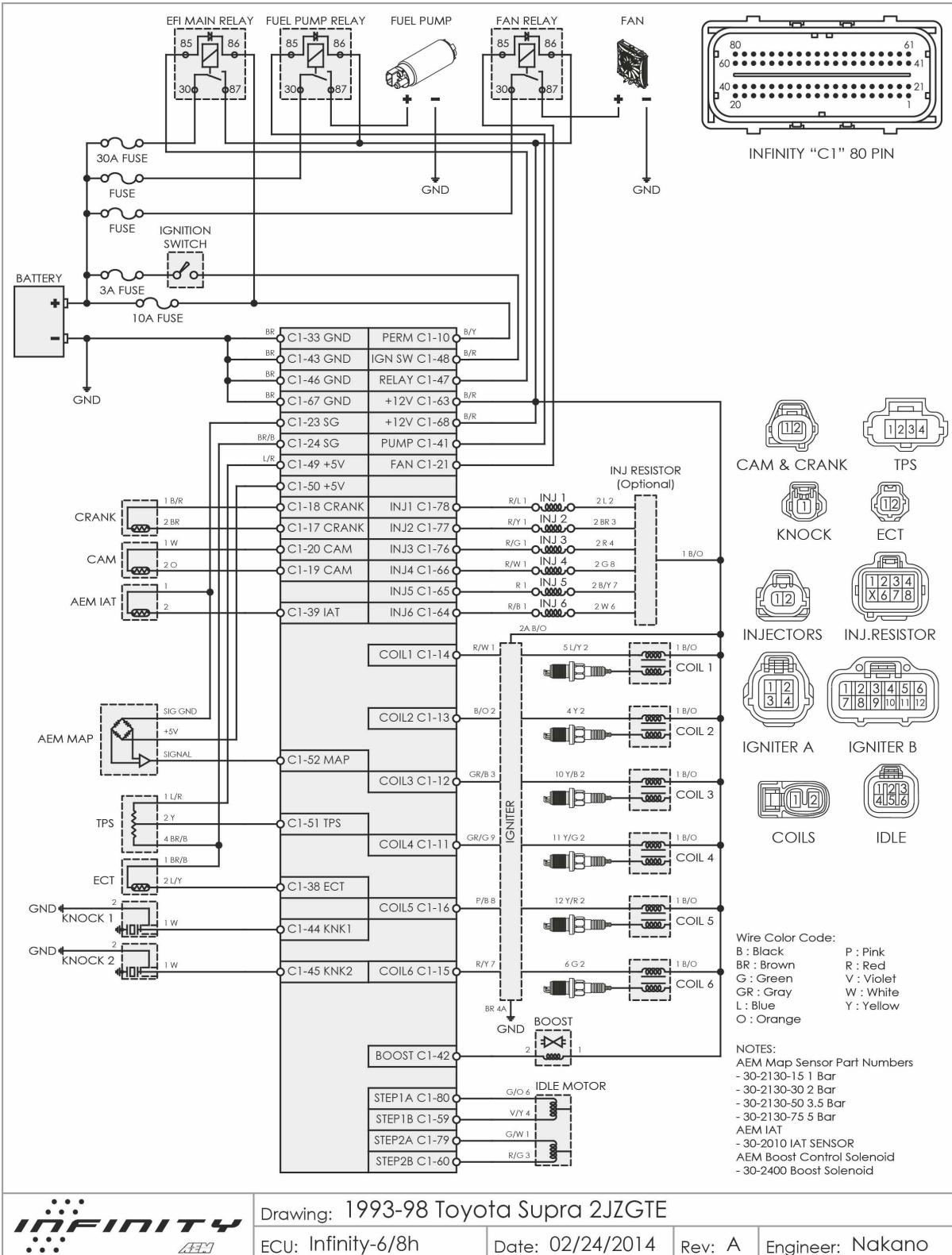
2.5.7 EVO IX Pinout, Infinity-6/8h



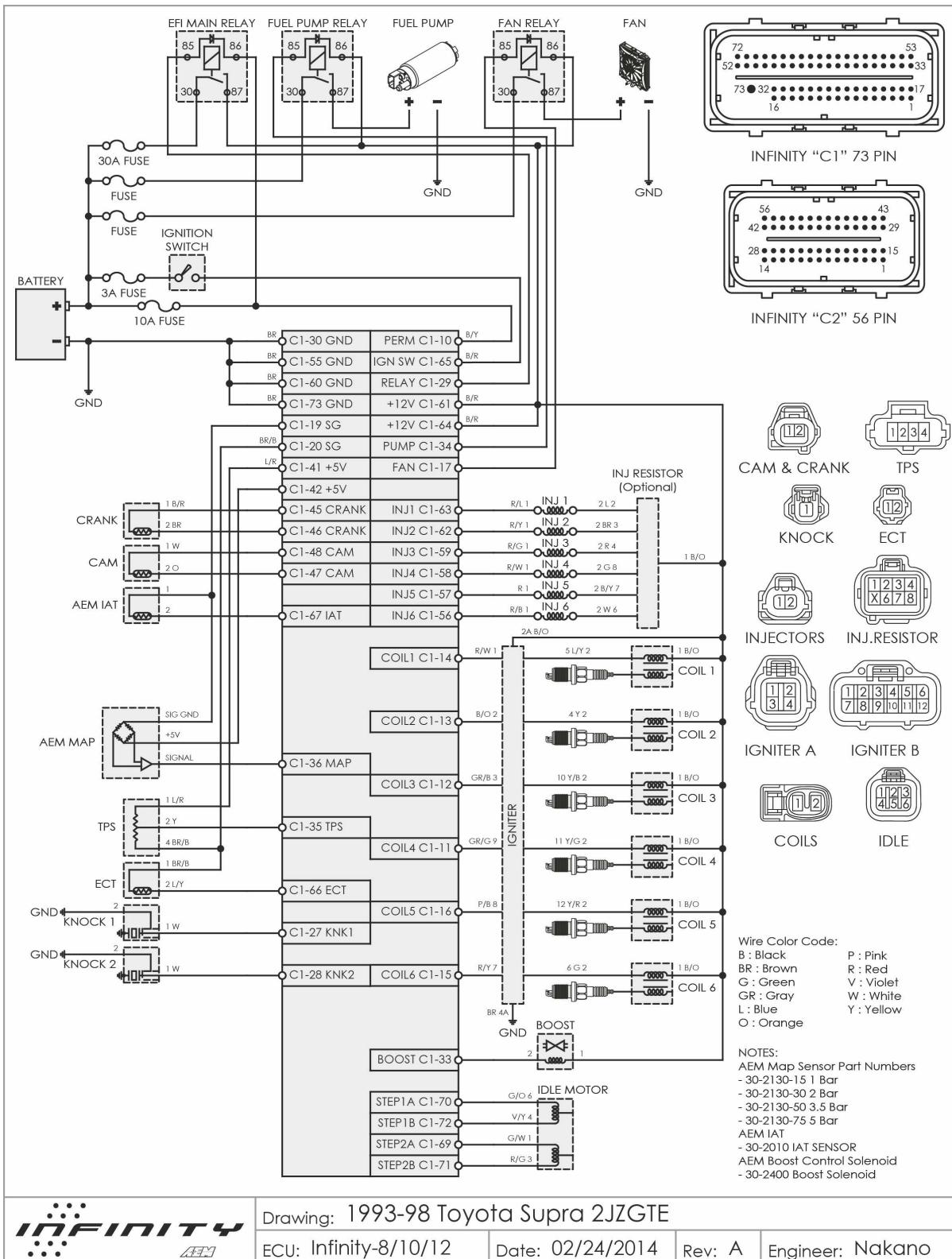
2.5.8 EVO IX Pinout, Infinity-8/10/12



2.5.9 93-98 Toyota Supra 2JZGTE, Infinity-6/8h



2.5.10 93-98 Toyota Supra 2JZGTE, Infinity-8/10/12



Drawing: 1993-98 Toyota Supra 2JZGTE

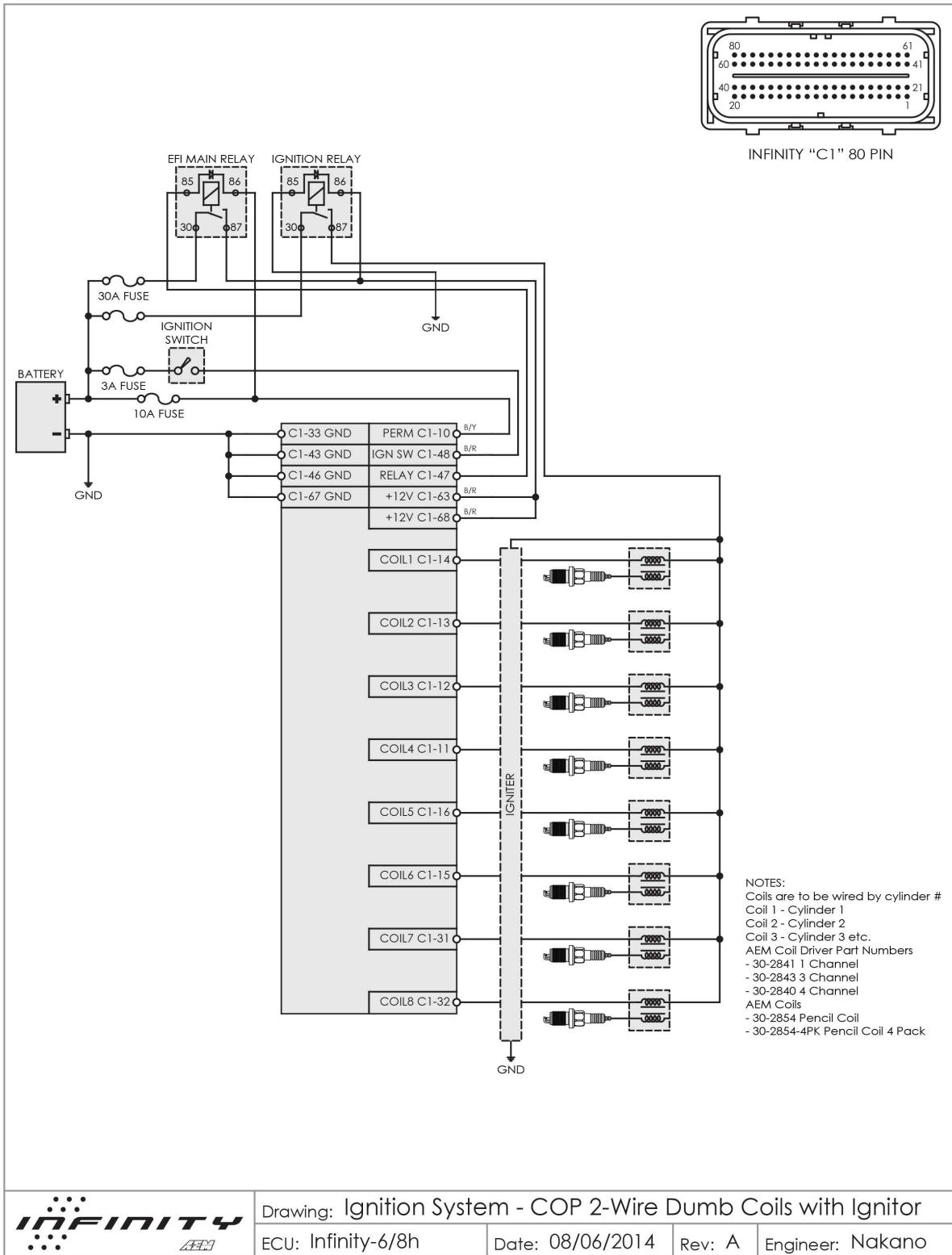
ECU: Infinity-8/10/12

Date: 02/24/2014

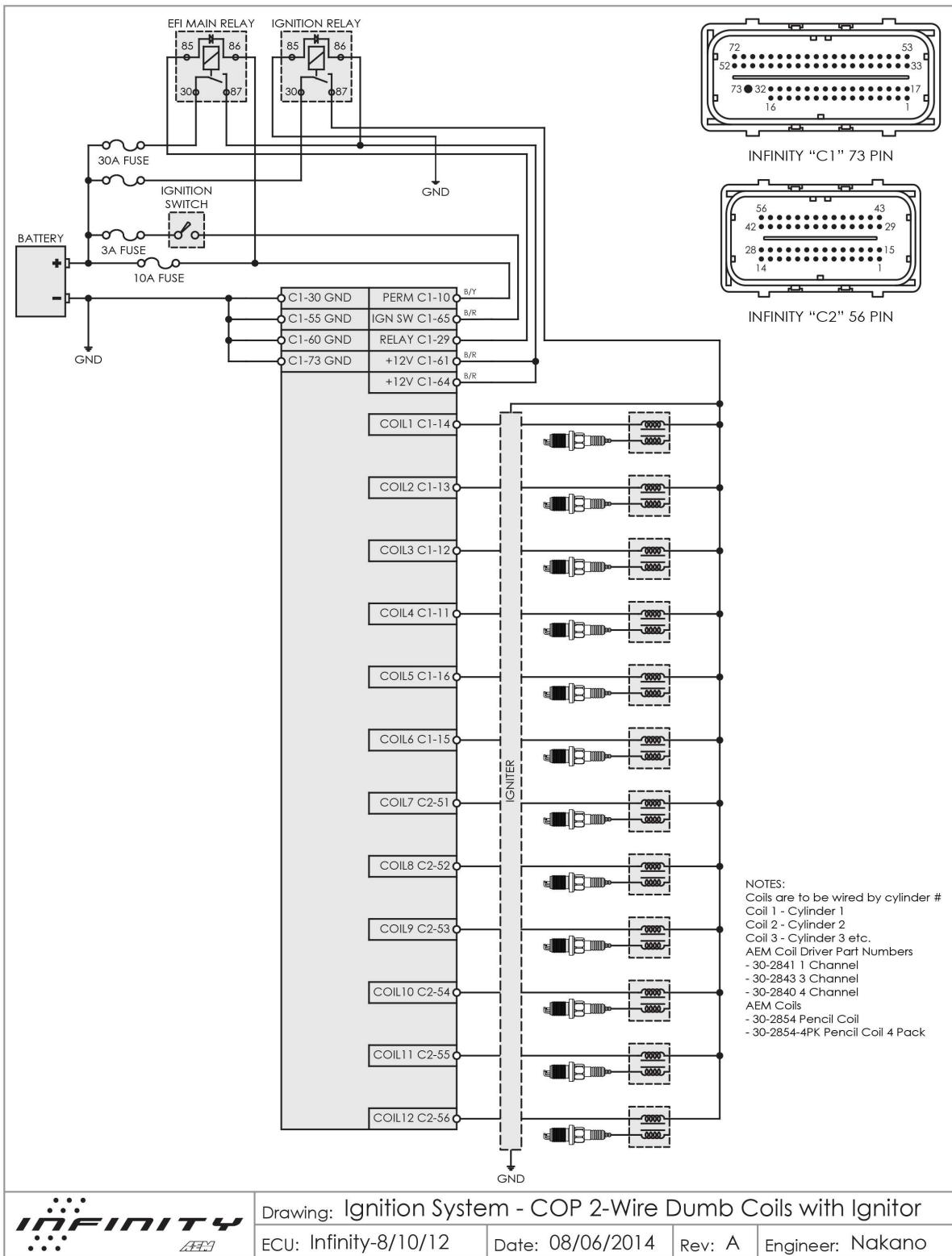
Rev: A

Engineer: Nakano

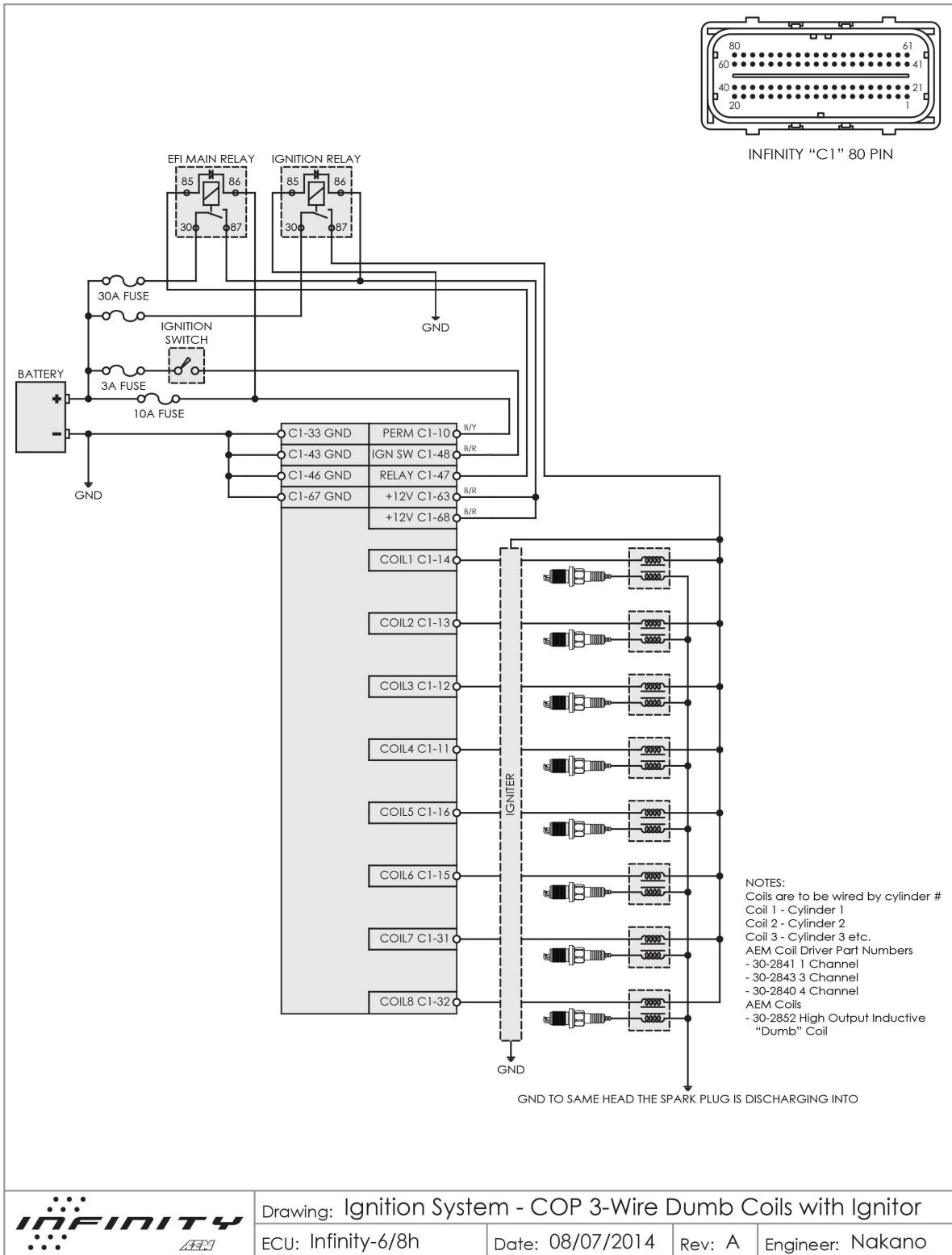
2.5.11 Ignition System - COP 2 Wire "Dumb" Coils with Ignitor, Infinity-6/8h



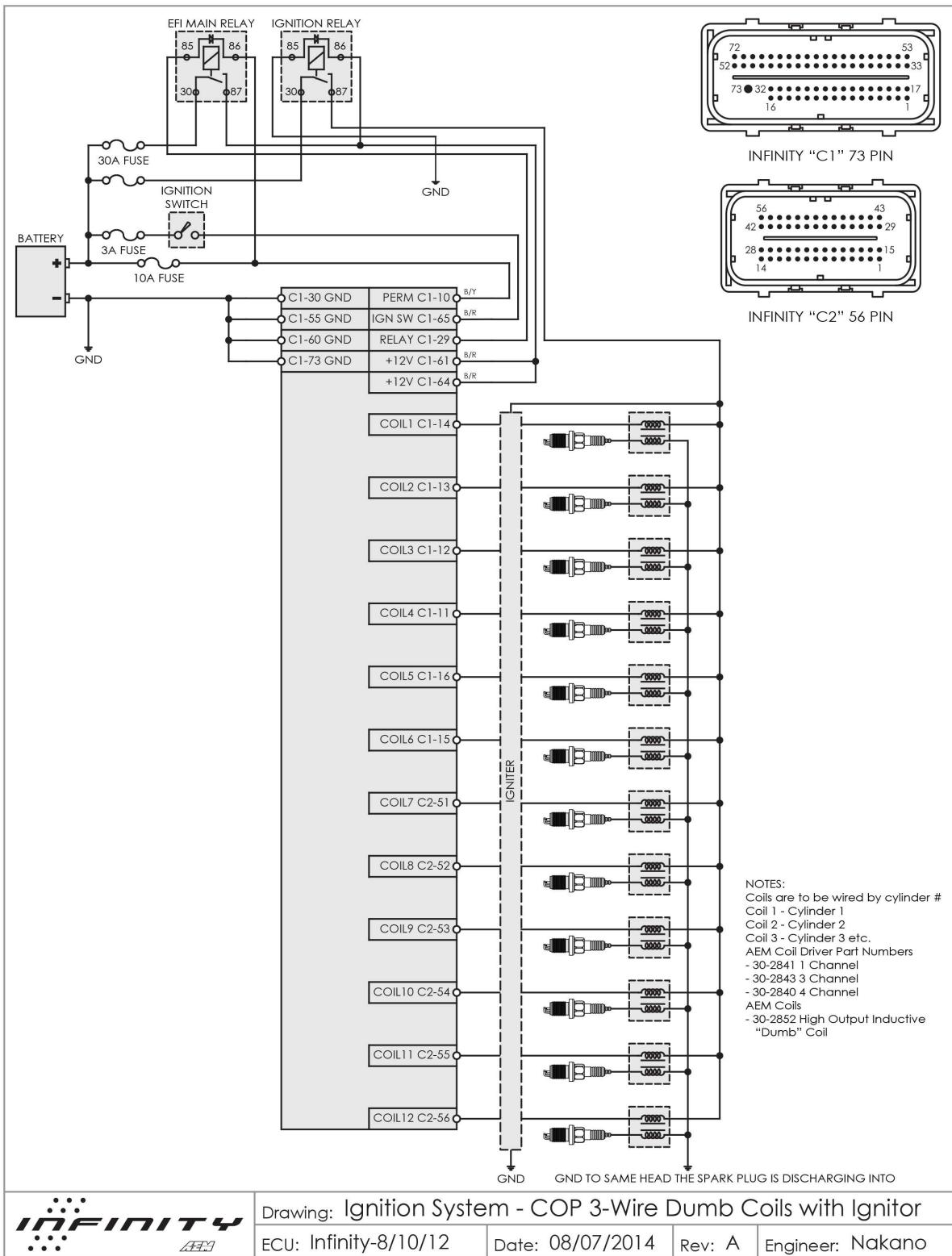
2.5.12 Ignition System - COP 2 Wire "Dumb" Coils with Ignitor, Infinity-8/10/12



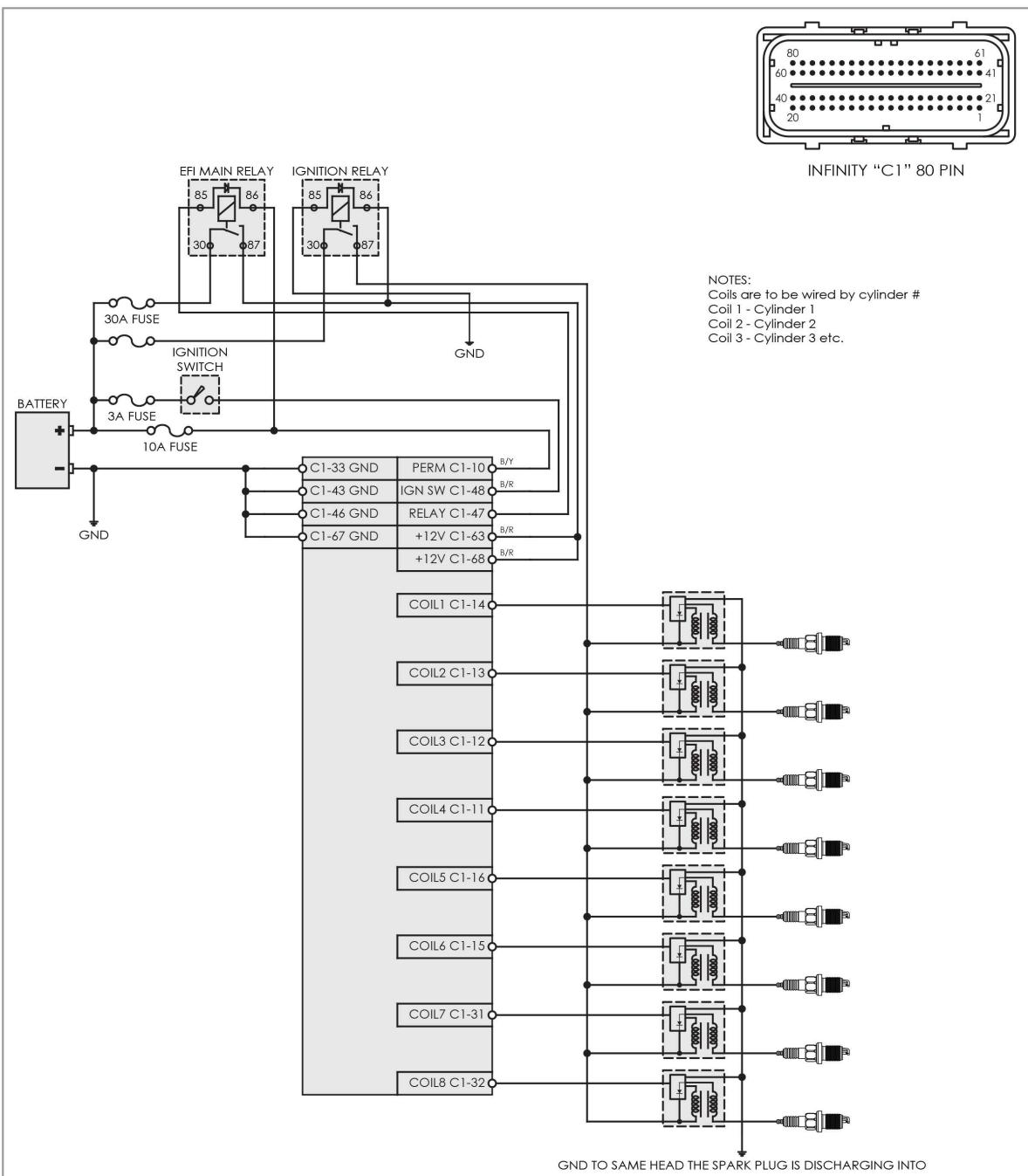
2.5.13 Ignition System - COP 3 Wire "Dumb" Coils with Ignitor, Infinity-6/8h



2.5.14 Ignition System - COP 3 Wire "Dumb" Coils with Ignitor, Infinity-8/10/12



2.5.15 Ignition System - COP 3 Wire "Smart" Coils, Infinity-6/8h



Drawing: Ignition System - COP 3-Wire Smart

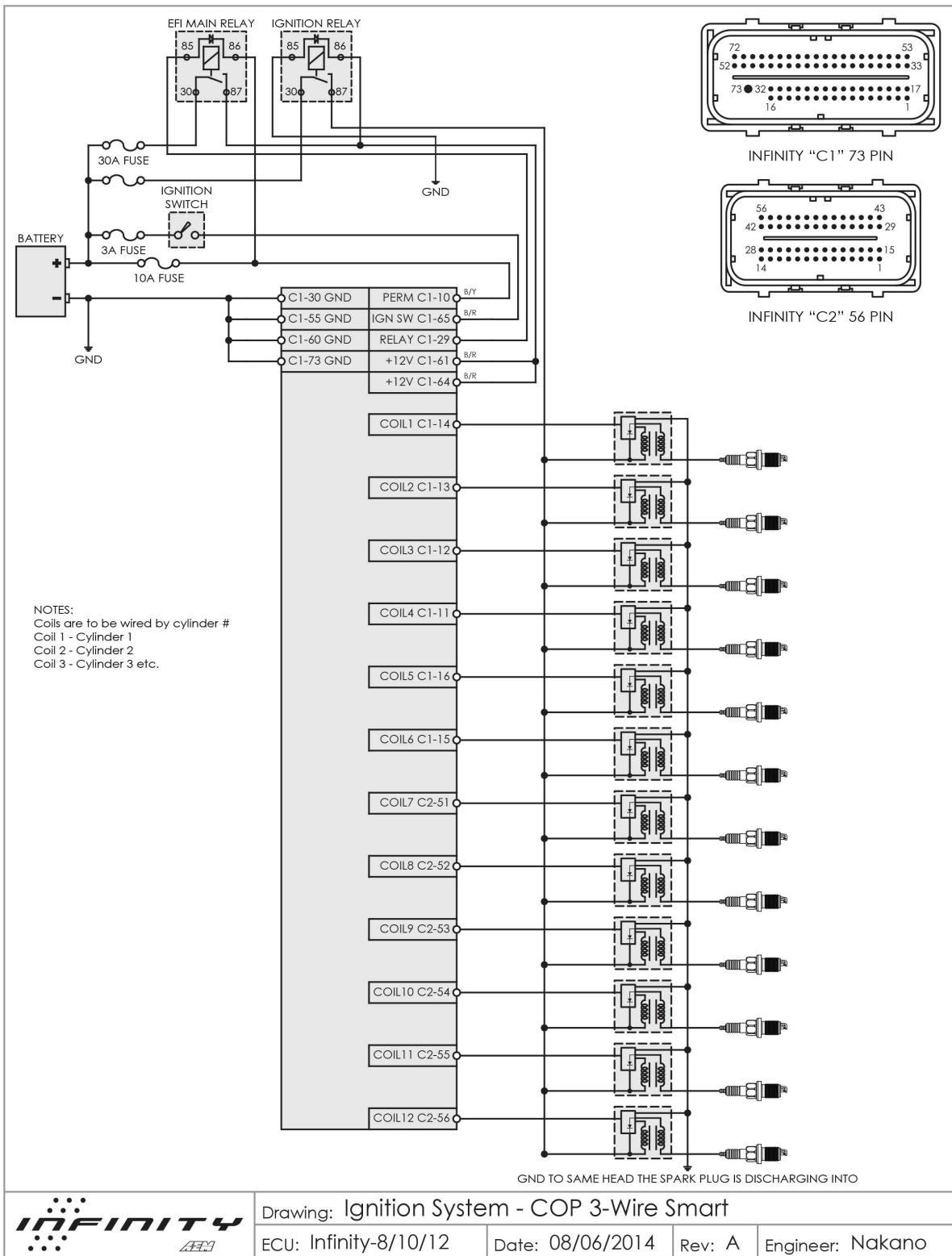
ECU: Infinity-6/8h

Date: 08/06/2014

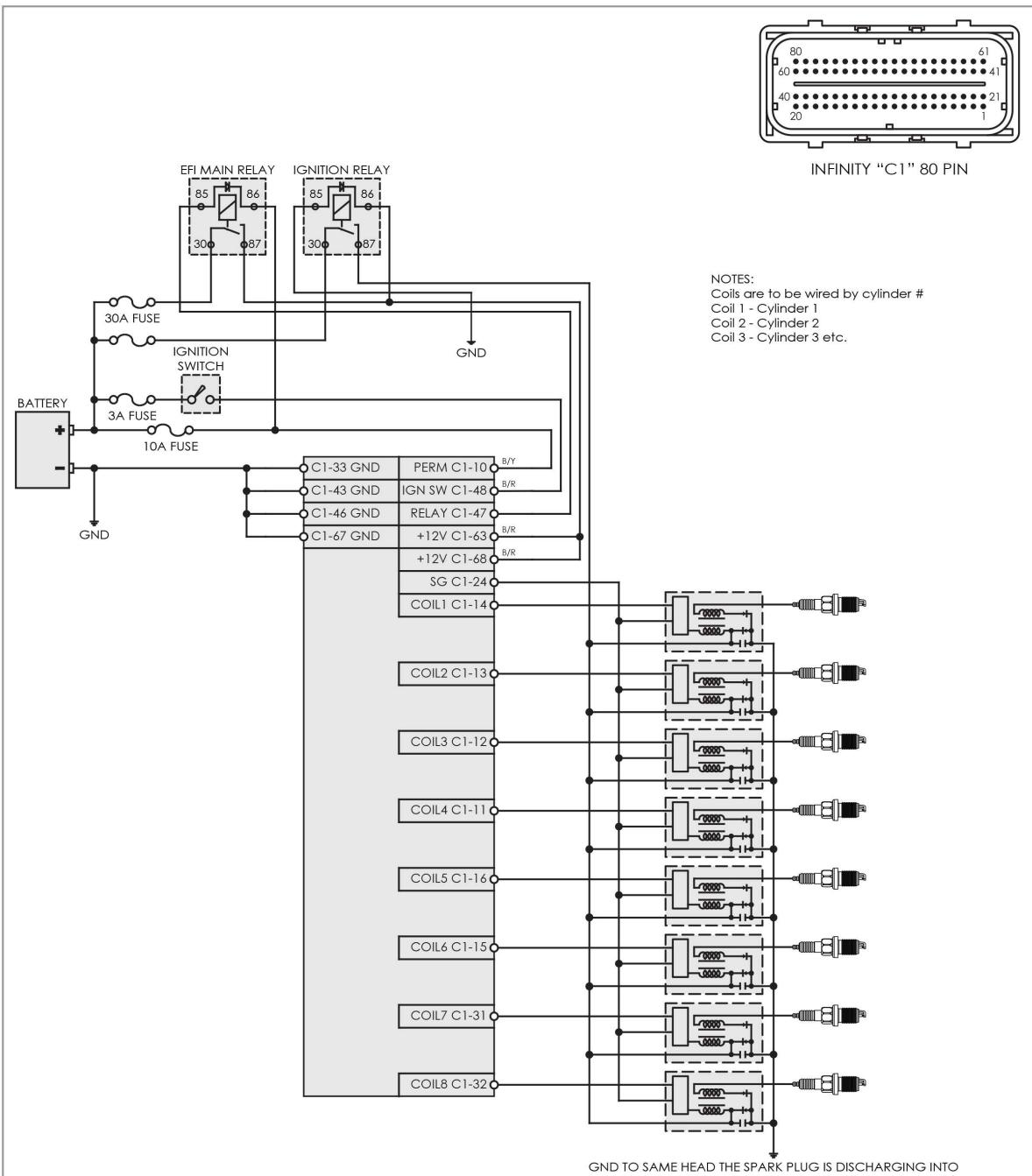
Rev: A

Engineer: Nakano

2.5.16 Ignition System - COP 3 Wire "Smart" Coils, Infinity-8/10/12



2.5.17 Ignition System - COP 4 Wire "Smart" Coils, Infinity-6/8h



Drawing: Ignition System - COP 4-Wire Smart

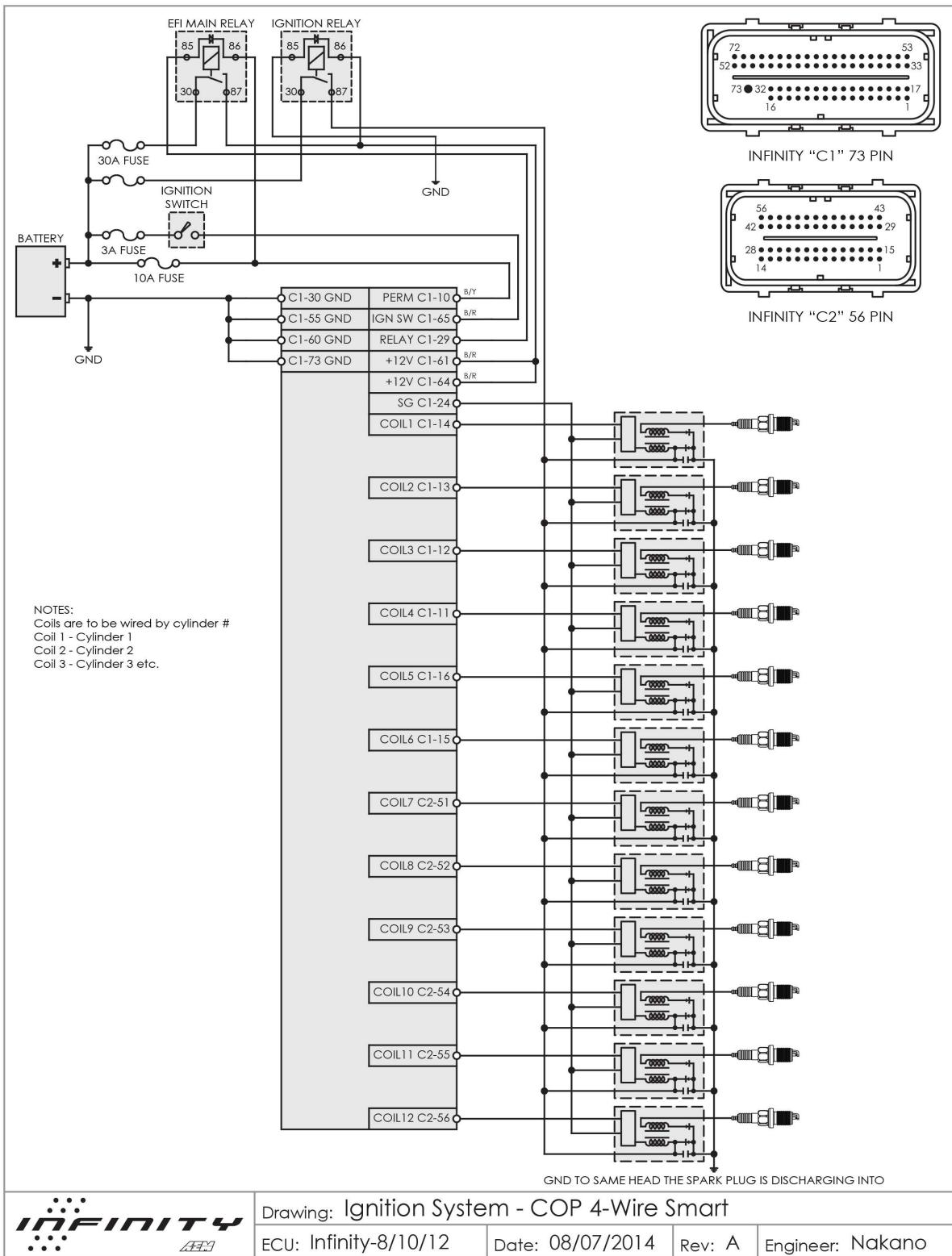
ECU: Infinity-6/8h

Date: 08/07/2014

Rev: A

Engineer: Nakano

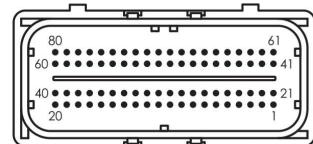
2.5.18 Ignition System - COP 4 Wire "Smart" Coils, Infinity-8/10/12



2.5.19 GM LS3 DBW Wiring, Infinity-6/8h

ACCELERATOR PEDAL POSITION (APP) SENSOR

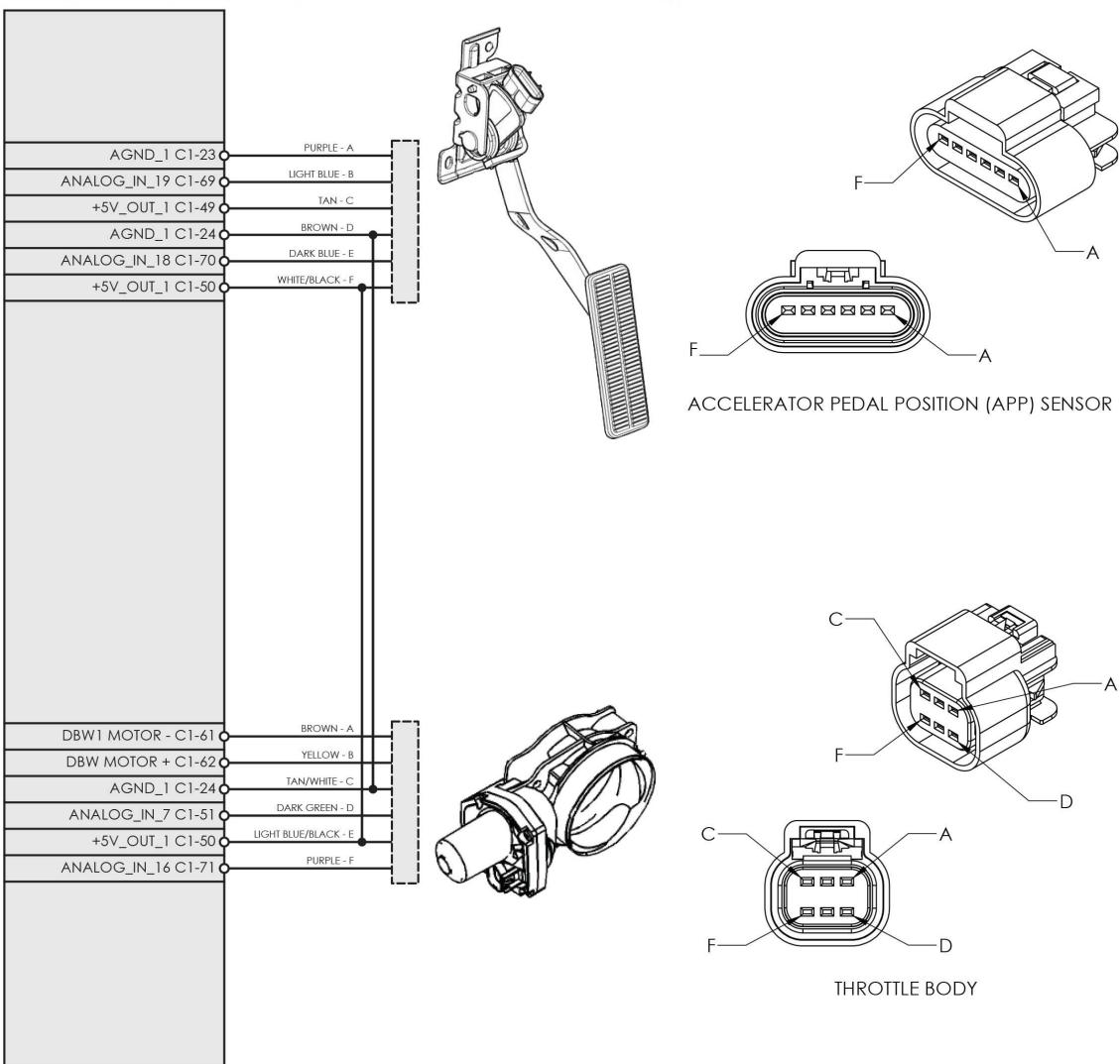
| GM PIN | INFINITY PIN | WIRE COLOR | FUNCTION |
|--------|--------------|-------------|--|
| A | C1-23 | Purple | Sensor Ground |
| B | C1-69 | Light Blue | Accelerator Pedal Position (APP) Sensor 2 Signal |
| C | C1-49 | Tan | +5 Volt Reference |
| D | C1-24 | Brown | Sensor Ground |
| E | C1-70 | Dark Blue | Accelerator Pedal Position (APP) Sensor 1 Signal |
| F | C1-50 | White/Black | +5 Volt Reference |



INFINITY "C1" 80 PIN

THROTTLE BODY

| GM PIN | INFINITY PIN | WIRE COLOR | FUNCTION |
|--------|--------------|------------------|--|
| A | C1-61 | Brown | Throttle Acuator Control (TAC) Motor Control - 2 |
| B | C1-62 | Yellow | Throttle Acuator Control (TAC) Motor Control - 1 |
| C | C1-24 | Tan/White | Sensor Ground |
| D | C1-51 | Dark Green | Throttle Position Sensor 1 Signal |
| E | C1-50 | Light Blue/Black | +5 Volt Reference |
| F | C1-70 | Purple | Throttle Position Sensor 2 Signal |



Drawing: GM LS3 ACCELERATOR PEDAL & DBW THROTTLE BODY

ECU: Infinity-6/8h

Date: 08/04/2014

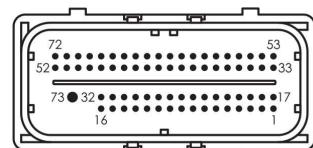
Rev: A

Engineer: Nakano

2.5.20 GM LS3 DBW Wiring, Infinity-8/10/12

ACCELERATOR PEDAL POSITION (APP) SENSOR

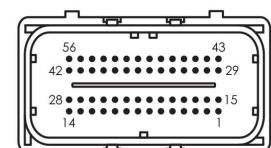
| GM PIN | INFINITY PIN | WIRE COLOR | FUNCTION |
|--------|--------------|-------------|--|
| A | C1-19 | Purple | Sensor Ground |
| B | C2-14 | Light Blue | Accelerator Pedal Position (APP) Sensor 2 Signal |
| C | C1-42 | Tan | +5 Volt Reference |
| D | C1-20 | Brown | Sensor Ground |
| E | C2-13 | Dark Blue | Accelerator Pedal Position (APP) Sensor 1 Signal |
| F | C2-22 | White/Black | +5 Volt Reference |



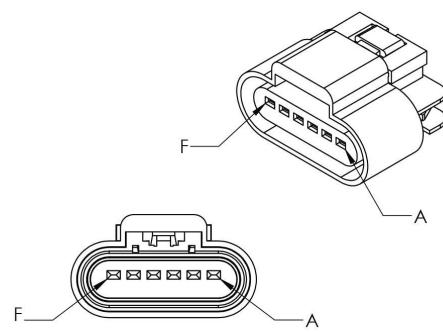
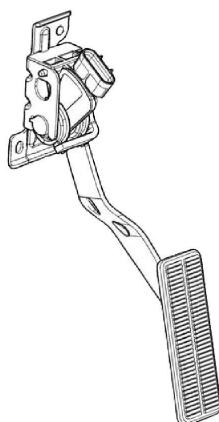
INFINITY "C1" 73 PIN

THROTTLE BODY

| GM PIN | INFINITY PIN | WIRE COLOR | FUNCTION |
|--------|--------------|------------------|--|
| A | C1-53 | Brown | Throttle Acuator Control (TAC) Motor Control - 2 |
| B | C1-54 | Yellow | Throttle Acuator Control (TAC) Motor Control - 1 |
| C | C2-30 | Tan/White | Sensor Ground |
| D | C1-35 | Dark Green | Throttle Position Sensor 1 Signal |
| E | C2-23 | Light Blue/Black | +5 Volt Reference |
| F | C2-21 | Purple | Throttle Position Sensor 2 Signal |



INFINITY "C2" 56 PIN



ACCELERATOR PEDAL POSITION (APP) SENSOR



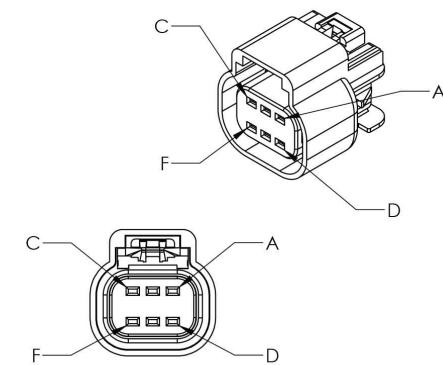
Drawing: GM LS3 ACCELERATOR PEDAL & DBW THROTTLE BODY

ECU: Infinity-8/10/12

Date: 08/04/2014

Rev: A

Engineer: Nakano



THROTTLE BODY