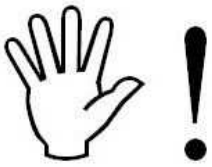
# Instruction Manual

PERFORMANCE ELECTRONICS

## 30-3706

## Mini Flying Lead Harness for Infinity-6/8h



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**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!**

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# Introduction

Some harness user manuals contain active hyperlinks that point to specific sections or even launch additional documents such as wiring diagrams. Recommend viewing this document electronically to take advantage of all features.

Several universal wiring harness options are available for Infinity products. They range in complexity from simple plug and pin kits to complete engine harness assemblies that include power distribution centers. Custom wiring harness projects should only be undertaken by experienced harness builders. If in doubt, please contact AEM for recommendations.

**30-3805 Universal V8 harness system for Infinity-8/10 systems**
The Infinity Universal 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.

**30-3809 Universal V8 harness system for Infinity-6/8h systems**
The Infinity Universal V8 Harness system consists of a universal core harness and optional application specific extensions. It was designed with flexibility in mind. It includes throttle body and pedal interfaces for DBW applications. 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.

**30-3706 Mini Flying Lead 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 flying leads that can be terminated by the harness builder at the sensor and actuator connectors.

**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.

**30-3701 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.

**30-3704 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.

***Please read the entire User Manual prior to beginning any installation.***

# 3706 Kit Contents

| AEM P/N | Description | Qty |
|---|---|---|
| 36-3706 | Mini Flying Lead Harness | 1 |
| 35-2060 | Micro Relay | 1 |
| 3706-001 | 22ga Wire with Molex Terminal, 96" | 10 |
| 3706-002 | Cable 2-Pair Twisted/Shielded, 96" | 2 |
| 4-2000 | Terminal, Molex 22ga | 40 |

# ECU Connectors

The Infinity-6/8h/8/10 ECUs use the MX123 Sealed Connection System from Molex. AEM strongly recommends that users become familiar with the proper tools and procedures before attempting any modifications or additions to these connector housings. The entire Molex user manual can be downloaded direct from Molex at http://www.molex.com/mx_upload/family//MX123UserManual.pdf

# Installation Notes

**Wiring Conventions and EMI**

Some wire harness assemblies come pre-wired with all connectors, fuses, and relays needed to operate an engine. Harnesses that include a PDC generally require extension/termination of the flying leads to their appropriate devices, and additional sensors and other devices can be wired into the harness as needed for the specific application. The following guidelines should be adhered to while completing the required wiring.

A proper wiring job includes proper termination of the wire at the sensor. The wire terminal end must be moisture tight where it plugs into the sensor and it must have strong, electrically sound terminals. The preferred method of

securing a wire to a terminal is to use a crimp terminal with NO solder. It is important to use the proper crimping tool for sound terminal construction. Plastic terminal plugs must have moisture tight seals. Inspect each plug to make sure the seals are in place. Di-electric grease can be added in the terminal slots to further aid in corrosion resistance.

If a splice into a wire must be made and no solder-less terminals are available, then you must properly solder the splice.

Noise can be a serious problem and can cause intermittent misfiring of the engine. Every precaution should be taken to prevent interference to the ECU's operation. Resistive plug leads are REQUIRED.

To eliminate or reduce the chance of EMI, wires that carry high current must run in twisted pairs. An example of this would be the power leads from a multiple spark ignition system. These ignition systems can carry up to 100 amps for a couple milliseconds at the time of discharge, which induces a strong magnetic field in close proximity of the wires.

The routing of the wire loom is critical to EFI system performance and safety. The following safety considerations should be made when installing the wire loom:

- Heat protection: the loom should be placed away from or insulated from sources of heat. The obvious item(s) that should be avoided are the exhaust manifolds, EGR delivery tubes, and turbochargers. If it is absolutely necessary to route a wire in close proximity to any of these items, then a suitable insulator must be used.
- Noise suppression: do not route wires near the HT leads. For coil-on-plug ignition systems this is not as critical.
- Moving component protection: route wires away from moving components such as fans, the blower belt, or the throttle linkage. Also, make sure the wires are not under any strain when the engine is at full deflection on the motor mounts.
- Never have the wires in exposed bundles throughout the engine compartment.

**Determining ECU Location**

- It is recommended that the ECU be placed in an environment that does not expose it to temperatures above 85° Celsius (160F).
- In cases where the Infinity is to be used in place of the stock ECU, the location that the stock ECU occupied is suitable.
- On applications where the ECU is to be located in a different position than stock, the interior of the vehicle is best.
- The Infinity should be located in a place that reduces the length of extension wires from the PDC while maintaining an environmentally sound location.
- The ECU location must permit the PDC to be mounted in a serviceable location.

**Power Distribution Center**

PDCs included in the harness assemblies generally include all relays and fuses necessary for proper function and should be mounted in a location which permits serviceability. Ideally the PDC should be located in the passenger compartment, or if necessary within the engine compartment as far away from heat sources as can be achieved. Some PDCs contain flying lead bundles which must be wired to the battery, fuel pump and radiator fan(s), switched ignition and possibly other interfaces. Routing of this flying lead bundle should also be taken into account when determining the mounting location of the PDC.

# 3706 Installation Tips

The Mini Flying Lead Harness comes bundled into several groups for ease of location and identification. Each wire within a bundle is printed with the wire's function 6" from the end.

NOTE: This harness includes wires labeled for Injectors 7 & 8 and Coils 7 & 8. These outputs are only available on Infinity-308 (formerly Infinity-8h) ECUs, and are not present on the Infinity-306 (formerly Infinity-6). These wires are noted with an asterisk (*) in the tables below. In the case of using this harness with an Infinity-306 ECU, the unused flying leads may be re-purposed for the corresponding ECU I/O. Refer to ECU pinout documentation for details. Any unused wires should either be removed from the harness, or insulated and secured out of the way.

A Micro Relay is included in this harness kit to control power to the ECU. The relay needs to be installed into the holder located next to the main ECU connector on the wire harness. The relay will only fit in the holder in one direction.

# 3706 Flying Lead Harness Pinouts

| | Infinity Connector C1 | | | 80 Way F Receptacle 0.64 2.8 Series Sealed (GY) |
|---|---|---|---|---|
| Pin | Wire Color | Gauge | Destination | Function |
| C1-1 | | | | |
| C1-2 | PNK | 22 | Main I/O Bundle | TACH (Lowside 5) |
| C1-3 | ORG | 22 | Injector Bundle | INJECTOR 7* |
| C1-4 | ORG | 22 | Injector Bundle | INJECTOR 8* |
| C1-5 | YEL | 20 | UEGO Sensor Connector-Pin 4 | UEGO1 HEAT |
| C1-6 | YEL | 20 | UEGO Sensor Connector-Pin 2 | UEGO1 IA |
| C1-7 | YEL | 20 | UEGO Sensor Connector-Pin 6 | UEGO 1 IP |
| C1-8 | YEL | 20 | UEGO Sensor Connector-Pin 1 | UEGO 1 UN |
| C1-9 | YEL | 20 | UEGO Sensor Connector-Pin 5 | UEGO1 VM |
| C1-10 | RED | 18 | PWR-3 | PERM BATTERY PWR |
| C1-11 | BLU | 22 | Coil Bundle | COIL 4 |
| C1-12 | BLU | 22 | Coil Bundle | COIL 3 |
| C1-13 | BLU | 22 | Coil Bundle | COIL 2 |
| C1-14 | BLU | 22 | Coil Bundle | COIL 1 |
| C1-15 | BLU | 22 | Coil Bundle | COIL 6 |
| C1-16 | BLU | 22 | Coil Bundle | COIL 5 |
| C1-17 | | | | |
| C1-18 | | | | |
| C1-19 | | | | |
| C1-20 | | | | |
| C1-21 | PNK | 22 | Main I/O Bundle | FAN (Lowside 2) |
| C1-22 | | | | |
| C1-23 | BLK | 22 | Main I/O Bundle | SIG GND (ANALOG SENSOR GROUND) |
| C1-24 | | | | |
| C1-25 | | | | |
| C1-26 | | | | |
| C1-27 | | | | |
| C1-28 | | | | |
| C1-29 | | | | |
| C1-30 | TAN | 22 | Main I/O Bundle | 2 STEP (Digital 5) |
| C1-31 | BLU | 22 | Coil Bundle | COIL 7* |

| | | | | |
|---|---|---|---|---|
| C1-32 | BLU | 22 | Coil Bundle | COIL 8* |
| C1-33 | BLK | 18 | S1 | BATTERY GROUND |
| C1-34 | | | | |
| C1-35 | | | | |
| C1-36 | | | | |
| C1-37 | | | | |
| C1-38 | WHT | 22 | Main I/O Bundle | CLT TEMP |
| C1-39 | WHT | 22 | Main I/O Bundle | AIR TEMP |
| C1-40 | | | | |
| C1-41 | PNK | 22 | Main I/O Bundle | FUEL PUMP (Lowside 0) |
| C1-42 | | | | |
| C1-43 | BLK | 18 | GND-2 | BATTERY GROUND |
| C1-44 | | | | |
| C1-45 | | | | |
| C1-46 | BLK | 18 | GND-3 | BATTERY GROUND |
| C1-47 | RED | 22 | R-85 | RELAY CONTROL OUT |
| C1-48 | RED | 22 | Ignition Switch Lead | IGN SWITCH IN |
| C1-49 | RED | 22 | Main I/O Bundle | VCC (ANALOG SENSOR POWER +5V) |
| C1-50 | | | | |
| C1-51 | WHT | 22 | Main I/O Bundle | TPS |
| C1-52 | WHT | 22 | Main I/O Bundle | MAP |
| C1-53 | | | | |
| C1-54 | | | | |
| C1-55 | | | | |
| C1-56 | | | | |
| C1-57 | | | | |
| C1-58 | | | | |
| C1-59 | | | | |
| C1-60 | | | | |
| C1-61 | | | | |
| C1-62 | | | | |
| C1-63 | RED | 22 | R-87 | RELAY POWER IN 12V |
| C1-64 | ORG | 22 | Injector Bundle | INJECTOR 6 |
| C1-65 | ORG | 22 | Injector Bundle | INJECTOR 5 |
| C1-66 | ORG | 22 | Injector Bundle | INJECTOR 4 |
| C1-67 | BLK | 18 | GND-4 | BATTERY GROUND |
| C1-68 | RED | 22 | R-87 | RELAY POWER IN 12V |
| C1-69 | | | | |

| | | | | |
|---|---|---|---|---|
| C1-70 | | | | |
| C1-71 | | | | |
| C1-72 | | | | |
| C1-73 | | | | |
| C1-74 | | | | |
| C1-75 | | | | |
| C1-76 | ORG | 22 | Injector Bundle | INJECTOR 3 |
| C1-77 | ORG | 22 | Injector Bundle | INJECTOR 2 |
| C1-78 | ORG | 22 | Injector Bundle | INJECTOR 1 |
| C1-79 | | | | |
| C1-80 | | | | |

| Injector Bundle | | | | | |
|---|---|---|---|---|---|
| | Wire Color | Gauge | Destination | **Wire Marking** | **Connection** |
| | ORG | 22 | C1-78 | INJ1 | Cylinder 1 Injector Signal |
| | ORG | 22 | C1-77 | INJ2 | Cylinder 2 Injector Signal |
| | ORG | 22 | C1-76 | INJ3 | Cylinder 3 Injector Signal |
| | ORG | 22 | C1-66 | INJ4 | Cylinder 4 Injector Signal |
| | ORG | 22 | C1-65 | INJ5 | Cylinder 5 Injector Signal |
| | ORG | 22 | C1-64 | INJ6 | Cylinder 6 Injector Signal |
| | ORG | 22 | C1-3 | INJ7* | Cylinder 7 Injector Signal (Infinity-308 only) |
| | ORG | 22 | C1-4 | INJ8* | Cylinder 8 Injector Signal (Infinity-308 only) |

| Coil Bundle | | | | | |
|---|---|---|---|---|---|
| | Wire Color | Gauge | Destination | **Wire Marking** | **Connection** |
| | BLU | 22 | C1-14 | COIL 1 | Cylinder 1 Coil Signal 0-5V Falling Edge Trigger |
| | BLU | 22 | C1-13 | COIL 2 | Cylinder 2 Coil Signal 0-5V Falling Edge Trigger |
| | BLU | 22 | C1-12 | COIL 3 | Cylinder 3 Coil Signal 0-5V Falling Edge Trigger |
| | BLU | 22 | C1-11 | COIL 4 | Cylinder 4 Coil Signal 0-5V Falling Edge Trigger |
| | BLU | 22 | C1-16 | COIL 5 | Cylinder 5 Coil Signal 0-5V Falling Edge Trigger |
| | BLU | 22 | C1-15 | COIL 6 | Cylinder 6 Coil Signal 0-5V Falling Edge Trigger |
| | BLU | 22 | C1-31 | COIL 7* | Cylinder 7 Coil Signal 0-5V Falling Edge Trigger (Infinity-308 only) |
| | BLU | 22 | C1-32 | COIL 8* | Cylinder 8 Coil Signal 0-5V Falling Edge Trigger (Infinity-308 only) |

| Ignition Switch Lead | | | | | |
|---|---|---|---|---|---|
| | Wire Color | Gauge | Destination | **Wire Marking** | **Connection** |
| | RED | 22 | C1-48 | IGN SW | Connect to single terminal on the ignition switch that provides +12V when the key is in both the 'Start' (cranking) and 'Run' position. |

| UEGO Sensor Connector | | | | |
|---|---|---|---|---|
| | Wire Color | Gauge | Destination | |
| | YEL | 20 | C1-8 | Plugs into AEM p/n 30-2001 Bosch LSU 4.2 Wideband UEGO Sensor |
| | YEL | 20 | C1-6 | |
| | YEL | 20 | AFR VH+ | |
| | YEL | 20 | C1-5 | |
| | YEL | 20 | C1-9 | |
| | YEL | 20 | C1-7 | |

| Main I/O Bundle | | | | | |
|---|---|---|---|---|---|
| | Wire Color | Gauge | Destination | **Wire Marking** | **Connection** |
| | WHT | 22 | C1-51 | TPS | Throttle Position signal |
| | WHT | 22 | C1-52 | MAP | Manifold Absolute Pressure signal |
| | WHT | 22 | C1-38 | CLT TEMP | Coolant Temp Sensor signal |
| | WHT | 22 | C1-39 | AIR TEMP | Air Temp Sensor signal |
| | RED | 22 | C1-49 | VCC | +5V Supply for 0-5V Analog Sensors (TPS,MAP) |
| | BLK | 22 | C1-23 | SIG GND | Sensor Ground Reference for Analog and Temperature Sensors (TPS, MAP, CLT, IAT) |
| | PNK | 22 | C1-21 | FAN | Lowside (Ground) trigger for cooling fan relay |
| | PNK | 22 | C1-2 | TACH | 12V square wave signal for tachometer |
| | PNK | 22 | C1-41 | FUEL PUMP | Lowside (Ground) trigger for fuel pump relay |
| | TAN | 22 | C1-30 | 2 STEP | Switched input to trigger 2-Step rev limiter or other function. Ground this wire to trigger input. |

| Power/Ground Bundle | | | | | |
|---|---|---|---|---|---|
| | Wire Color | Gauge | Destination | **Wire Marking** | **Connection** |

| | | | | | |
|---|---|---|---|---|---|
| | RED | 18 | R-30 | BATT+ | Connect to battery positive (+) terminal. |
| | RED | 18 | R-86 | BATT+ | |
| | RED | 18 | C1-10 | PERM | |
| | YEL | 20 | UEGO Sensor Connector-Pin 3 | AFR VH+ | Connect to ignition-switched +12V power source. Do not connect to constant power source. |
| | BLK | 18 | C1-33 | PWR GND | Connect to chassis ground. Remove paint or plating at the attachment point. In general, the the resistance from the battery ground to this chassis location should be less than 0.1 Ohm. |
| | BLK | 18 | C1-43 | PWR GND2 | |
| | BLK | 18 | C1-46 | PWR GND3 | |
| | BLK | 18 | C1-67 | GROUND | |

| ECU Relay | | | | |
|---|---|---|---|---|
| Pin | Wire Color | Gauge | Destination | Description |
| R-85 | RED | 22 | C1-47 | ECU RELAY CONTROL SIGNAL |
| R-86 | RED | 18 | Power/Ground Bundle BATT+ | BATT+ |
| R-87 | RED | 22 | C1-63 | +12V RELAY POWER TO ECU |
| R-30 | RED | 18 | Power/Ground Bundle BATT+ | BATT+ |
| R-87A | | | | |

# Infinity-6/8h ECU Pinout

| Infinity Pin | Hardware Ref. | Hardware Specification | Notes |
|---|---|---|---|
| C1-1 | Lowside 4 | Lowside switch, 1.7A max, NO internal flyback diode.<br><br>12V pullup | See Setup Wizard Page "Output Function Assignment" for setup options. |
| C1-2 | Lowside 5 | Lowside switch, 6A max with internal flyback diode. Inductive load should NOT have full time power.<br><br>12V pullup | See Setup Wizard Page "Output Function Assignment" for setup options. |
| C1-3* | Lowside 6 (*Infinity-6 Only) | Lowside switch, 6A max with internal flyback diode. Inductive load should NOT have full time power.<br><br>No pullup | See Setup Wizard Page "Output Function Assignment" for setup options. |
| C1-3** | Injector 7<br>(**Infinity-8H Only) | For use with high impedance (10-15 ohms) injectors only, | Available on P/N 30-7108 only |

| Infinity Pin | Hardware Ref. | Hardware Specification | Notes |
|---|---|---|---|
| | | 1.7A max. | |
| C1-4* | Lowside 7<br>(*Infinity-6 Only) | Lowside switch, 6A max, NO internal flyback diode.<br><br>No pullup | See Setup Wizard Page "Output Function Assignment" for setup options. |
| C1-4** | Injector 8<br>(**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 | 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. |
| C1-6 | UEGO 1 IA | | Trim Current signal. Connect to pin 2 of Bosch UEGO sensor |
| C1-7 | UEGO 1 IP | | Pumping Current signal. Connect to pin 6 of Bosch UEGO sensor |
| C1-8 | UEGO 1 UN | | Nernst Voltage signal. Connect to pin 1 of Bosch UEGO sensor |
| C1-9 | UEGO 1 VM | | Virtual Ground signal. Connect to pin 5 of Bosch UEGO sensor. |
| C1-10 | Battery Perm Power | 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 | 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 | 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 | 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 | 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 | 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 |
|---|---|---|---|
| C1-16 | Coil 5 | 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+ | Differential Variable Reluctance Zero Cross Detection | See Setup Wizard page Cam/Crank for options. |
| C1-18 | Crankshaft Position Sensor VR- | | See Setup Wizard page Cam/Crank for options. |
| C1-19 | Camshaft Position Sensor 1 VR- | Differential Variable Reluctance Zero Cross Detection | See Setup Wizard page Cam/Crank for options. |
| C1-20 | Camshaft Position Sensor 1 VR+ | | See Setup Wizard page Cam/Crank for options. |
| C1-21 | Lowside 2 | Lowside switch, 1.7A max, NO internal flyback diode.<br><br>No pullup | See Setup Wizard Page "Output Function Assignment" for setup options. |
| C1-22 | Lowside 3 | Lowside switch, 6A max with internal flyback diode. Inductive load should NOT have full time power.<br><br>No pullup | See Setup Wizard Page "Output Function Assignment" for setup options. |
| C1-23 | Analog Sensor Ground | Dedicated analog ground | Analog 0-5V sensor ground |
| C1-24 | Analog Sensor Ground | Dedicated analog ground | Analog 0-5V sensor ground |
| C1-25 | Crankshaft Position Sensor Hall | 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 | 10K pullup to 12V. Will work with ground or floating switches. | See Setup Wizard page Cam/Crank for options. |
| C1-27 | Digital 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 | 10K pullup to 12V. Will work with ground or floating switches. | See Setup Wizard page "Input Function Assignments" for setup options. |
| C1-29 | Dig4 [Hz] / Dig4 Duty | 10K pullup to 12V. Will work with ground or floating switches. | See Setup Wizard page "Input Function Assignments" for setup options. |
| C1-29 | RS232 Rx | RS232 Line Driver/Receiver | Future expansion |
| C1-30 | Digital 5 | 10K pullup to 12V. Will work with ground or floating switches. | See Setup Wizard page "Input Function Assignments" for setup |

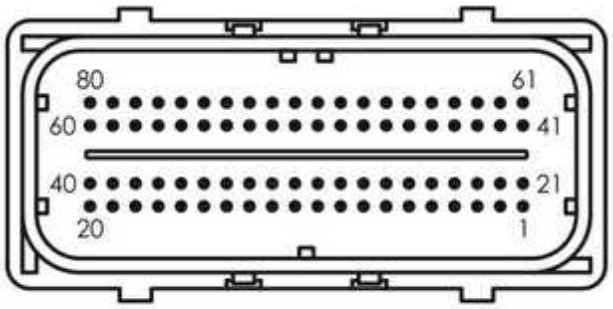
| Infinity Pin | Hardware Ref. | Hardware Specification | Notes |
|---|---|---|---|
| | | | options. |
| C1-30 | RS232 Tx | RS232 Line Driver/Receiver | Future expansion |
| C1-31* | Dig6 [Hz] / Dig6_Duty (*Infinity-6 Only) | 10K pullup to 12V. Will work with ground or floating switches. | See Setup Wizard page "Input Function Assignments" for setup options. |
| C1-31** | Coil 7 (**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 7 (*Infinity-6 Only) | 10K pullup to 12V. Will work with ground or floating switches. | See Setup Wizard page "Input Function Assignments" for setup options. |
| C1-32** | Coil 8 (**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 | Battery Ground | Battery Ground | Connect directly to battery ground |
| C1-34 | CANL A | Dedicated High Speed CAN Transceiver | Recommend twisted pair (one twist per 2") with terminating resistor. Contact AEM for additional information. |
| C1-35 | CANH A | Dedicated High Speed CAN Transceiver | Recommend twisted pair (one twist per 2") with terminating resistor. Contact AEM for additional information. |
| C1-36 | CanL B | Dedicated High Speed CAN Transceiver | Not used, reserved for future expansion. |
| C1-37 | CanH B | Dedicated High Speed CAN Transceiver | Not used, reserved for future expansion. |
| C1-38 | Analog Temp 1 | 12 bit A/D, 2.49K pullup to 5V | Default Coolant Temperature Input |
| C1-39 | Analog Temp 2 | 12 bit A/D, 2.49K pullup to 5V | Default Air Temperature Input |
| C1-40 | Analog Temp 3 | 12 bit A/D, 2.49K pullup to 5V | Default Oil Temperature Input. See Setup Wizard page "Input Function Assignments" for setup options. |
| C1-41 | Lowside 0 | Lowside switch, 1.7A max, NO internal flyback diode.<br><br>No pullup | See Setup Wizard Page "Output Function Assignment" for setup options. |
| C1-42 | Lowside 1 | Lowside switch, 6A max with internal flyback diode. Inductive | See Setup Wizard Page "Output Function Assignment" for setup |

| Infinity Pin | Hardware Ref. | Hardware Specification | Notes |
|---|---|---|---|
| | | load should NOT have full time power.<br><br>No pullup | options. |
| C1-43 | Battery Ground | Battery Ground | Connect directly to battery ground |
| C1-44 | Knock Sensor 1 | Dedicated knock signal processor | See Setup Wizard page Knock Setup for options. |
| C1-45 | Knock Sensor 2 | Dedicated knock signal processor | See Setup Wizard page Knock Setup for options. |
| C1-46 | Battery Ground | Battery Ground | Connect directly to battery ground |
| C1-47 | EFI Main Relay Switched Ground Output | 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 | Ignition Switch | 10K pulldown | Full time battery power must be available at C1-10 before this input is triggered. |
| C1-49 | +5V Sensor Power | Regulated, fused +5V supply for sensor power | Analog sensor power |
| C1-50 | +5V Sensor Power | Regulated, fused +5V supply for sensor power | Analog sensor power |
| C1-51 | Analog 7 | 12 bit A/D, 100K pullup to 5V | Default primary Throttle Position sensor inpur.<br><br>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 Set Throttle Range page for automatic min/max calibration. Monitor the Throttle [%] channel. Also DB1_TPSA [%] for DBW applications. |
| C1-52 | Analog 8 | 12 bit A/D, 100K pullup to 5V | Default Manifold Pressure Sensor input.<br><br>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. |

| Infinity Pin | Hardware Ref. | Hardware Specification | Notes |
|---|---|---|---|
| C1-53 | Analog 9 | 12 bit A/D, 100K pullup to 5V | Default Fuel Pressure Sensor Input.<br><br>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. |
| C1-54 | VR+ 2 | Differential Variable Reluctance Zero Cross Detection | See Setup Wizard page "Input Function Assignments" for setup options. |
| C1-55 | VR- 2 | | |
| C1-56 | VR- 3 | Differential Variable Reluctance Zero Cross Detection | See Setup Wizard page "Input Function Assignments" for setup options. |
| C1-57 | VR+ 3 | | |
| C1-58 | Highside 0 | 2.6A max, High Side Solid State Relay | See Setup Wizard Page "Output Function Assignment" for setup options. |
| C1-59 | Stepper 1B | 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. |
| C1-60 | Stepper 2B | 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. |
| C1-61 | DBW1 Motor - | 5.0A max Throttle Control Hbridge Drive | +12V to close |
| C1-62 | DBW1 Motor + | 5.0A max Throttle Control Hbridge Drive | +12V to open |
| C1-63 | Main Relay Power Input | 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 | Saturated (P/N 30-7108) or peak and hold, 3A max continuous (P/N 30-7106) | Injector 6 |
| C1-65 | Injector 5 | Saturated (P/N 30-7108) or peak and hold, 3A max continuous (P/N 30-7106) | Injector 5 |
| C1-66 | Injector 4 | Saturated (P/N 30-7108) or peak and hold, 3A max continuous (P/N 30-7106) | Injector 4 |

| Infinity Pin | Hardware Ref. | Hardware Specification | Notes |
|---|---|---|---|
| | | | |
| C1-67 | Battery Ground | Battery Ground | Connect directly to battery ground |
| C1-68 | Main Relay Power Input | 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 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. See Setup Wizard page "Input Function Assignments" for setup options. |
| C1-70 | Analog 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. See Setup Wizard page "Input Function Assignments" for setup options. |
| C1-71 | Analog 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. See Setup Wizard page "Input Function Assignments" for setup options. |
| C1-72 | 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. |
| C1-73 | Analog 13 | 12 bit A/D, 100K pullup to 5V | Default Oil Pressure Sensor input.<br><br>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. |
| C1-74 | Analog 11 | 12 bit A/D, 100K pullup to 5V | 0-5V analog signal. Use +5V Out pins as power supply and Sensor Ground |

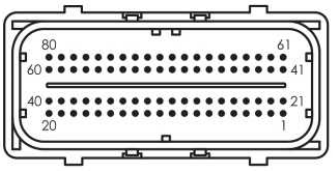
| Infinity Pin | Hardware Ref. | Hardware Specification | Notes |
|---|---|---|---|
| | | | pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU. See Setup Wizard page "Input Function Assignments" for setup options. |
| C1-75 | Analog 10 | 12 bit 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 Setup Wizard page "Input Function Assignments" for setup options. |
| C1-76 | Injector 3 | Saturated (P/N 30-7108) or peak and hold, 3A max continuous (P/N 30-7106) | Injector 3 |
| C1-77 | Injector 2 | Saturated (P/N 30-7108) or peak and hold, 3A max continuous (P/N 30-7106) | Injector 2 |
| C1-78 | Injector 1 | Saturated (P/N 30-7108) or peak and hold, 3A max continuous (P/N 30-7106) | Injector 1 |
| C1-79 | Stepper 2A | 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 | 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. |



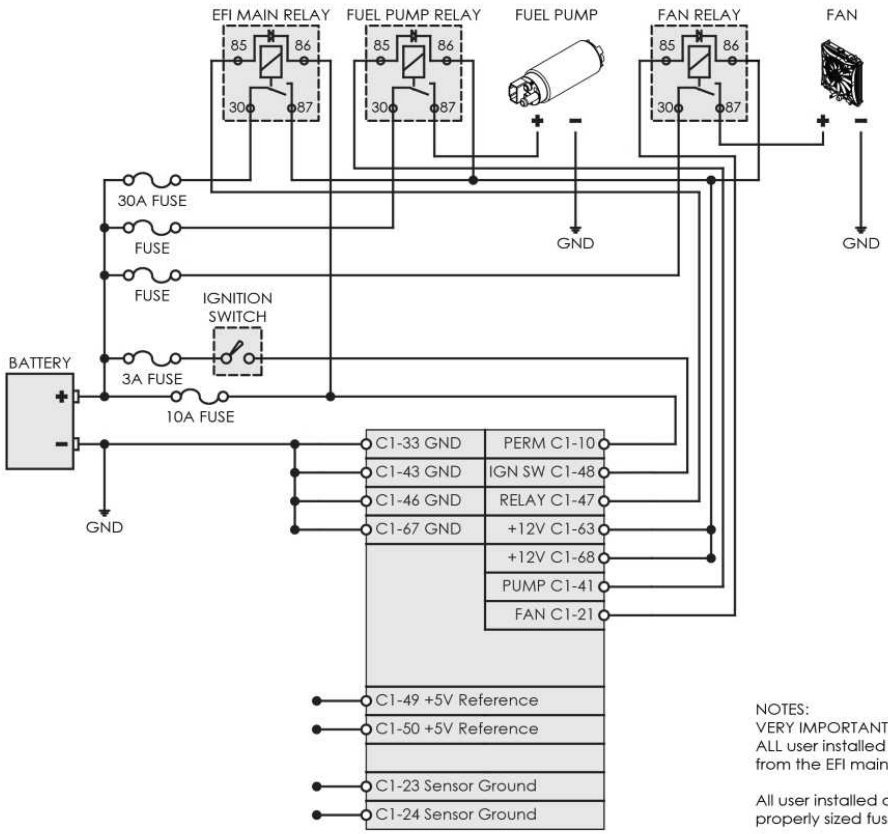

INFINITY "C1" 80 PIN

# 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



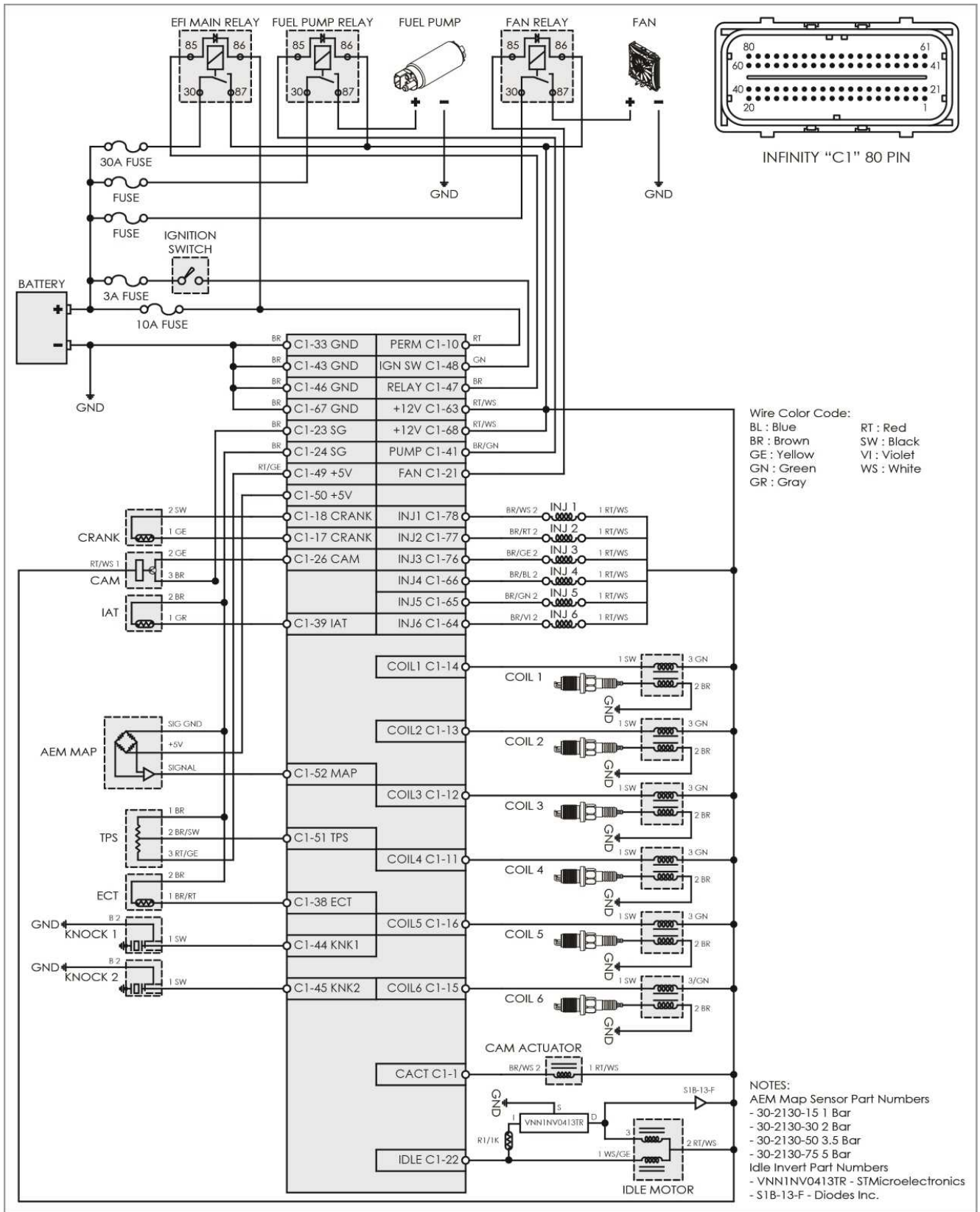

NOTES:
VERY IMPORTANT
ALL user installed auziliary relays must be powered by the output from the EFI main relay.

All user installed auxiliary 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.

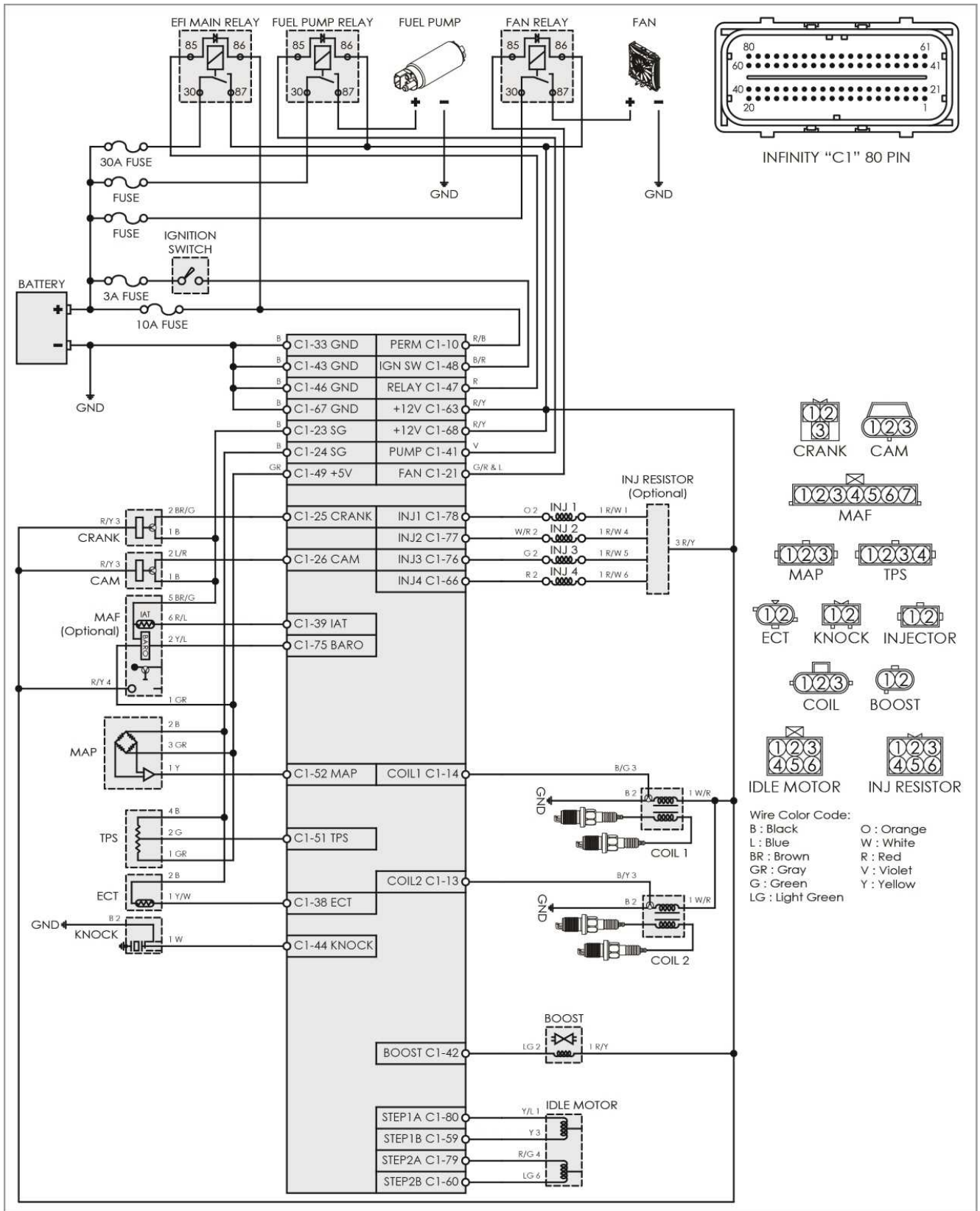
| | | | | |
|---|---|---|---|---|
| INFINITY AEM | Drawing: Power Distribution | | | |
| | ECU: Infinity-6/8h | Date: 08/05/2014 | Rev: A | Engineer: Nakano |

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



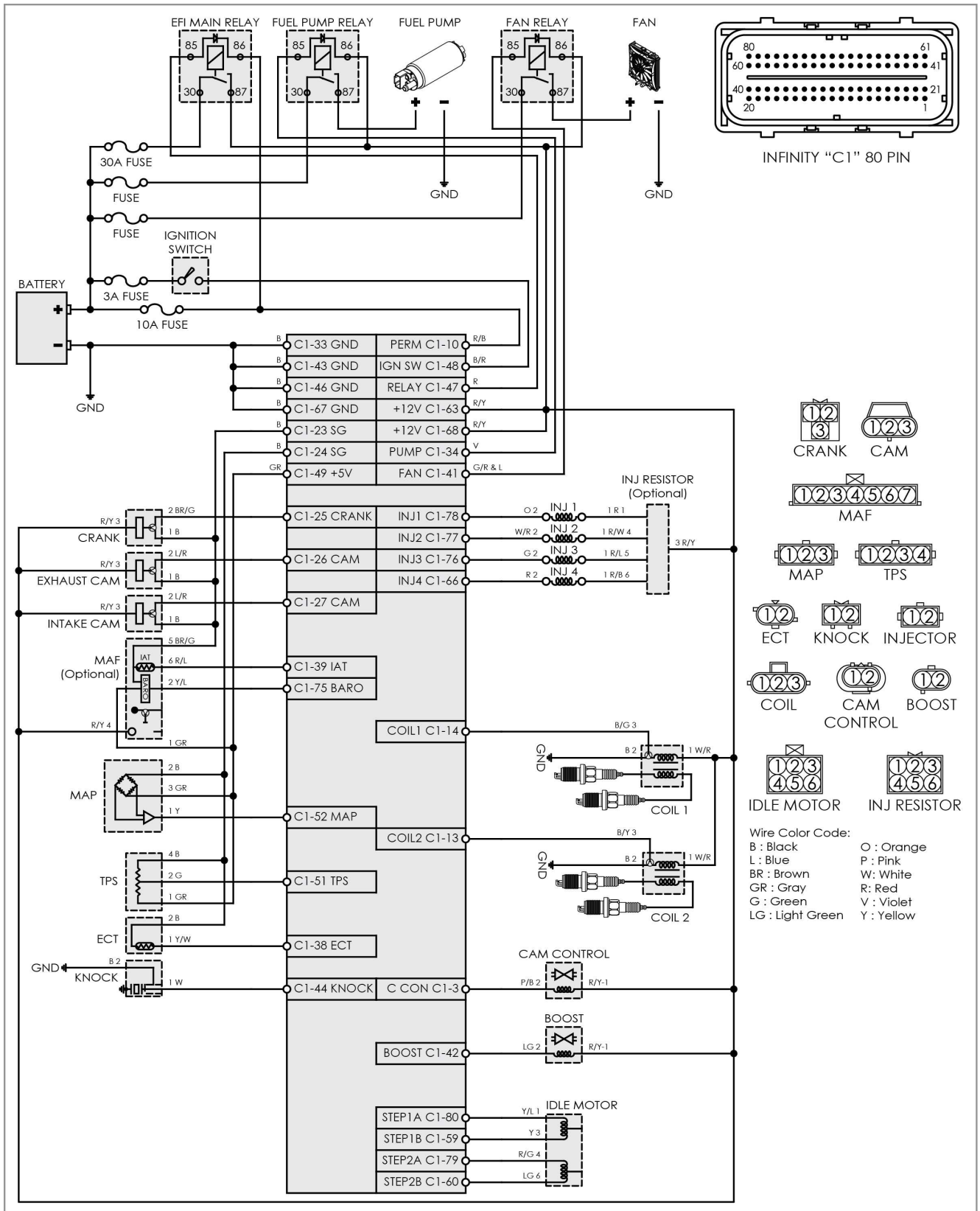

| | | | | |
|---|---|---|---|---|
| INFINITY AEM | Drawing: 1995 BMW M3 E36 M50 | | | |
| | ECU: Infinity-6/8h | Date: 02/20/2014 | Rev: A | Engineer: Nakano |

# EVO VIII, Infinity-6/8h



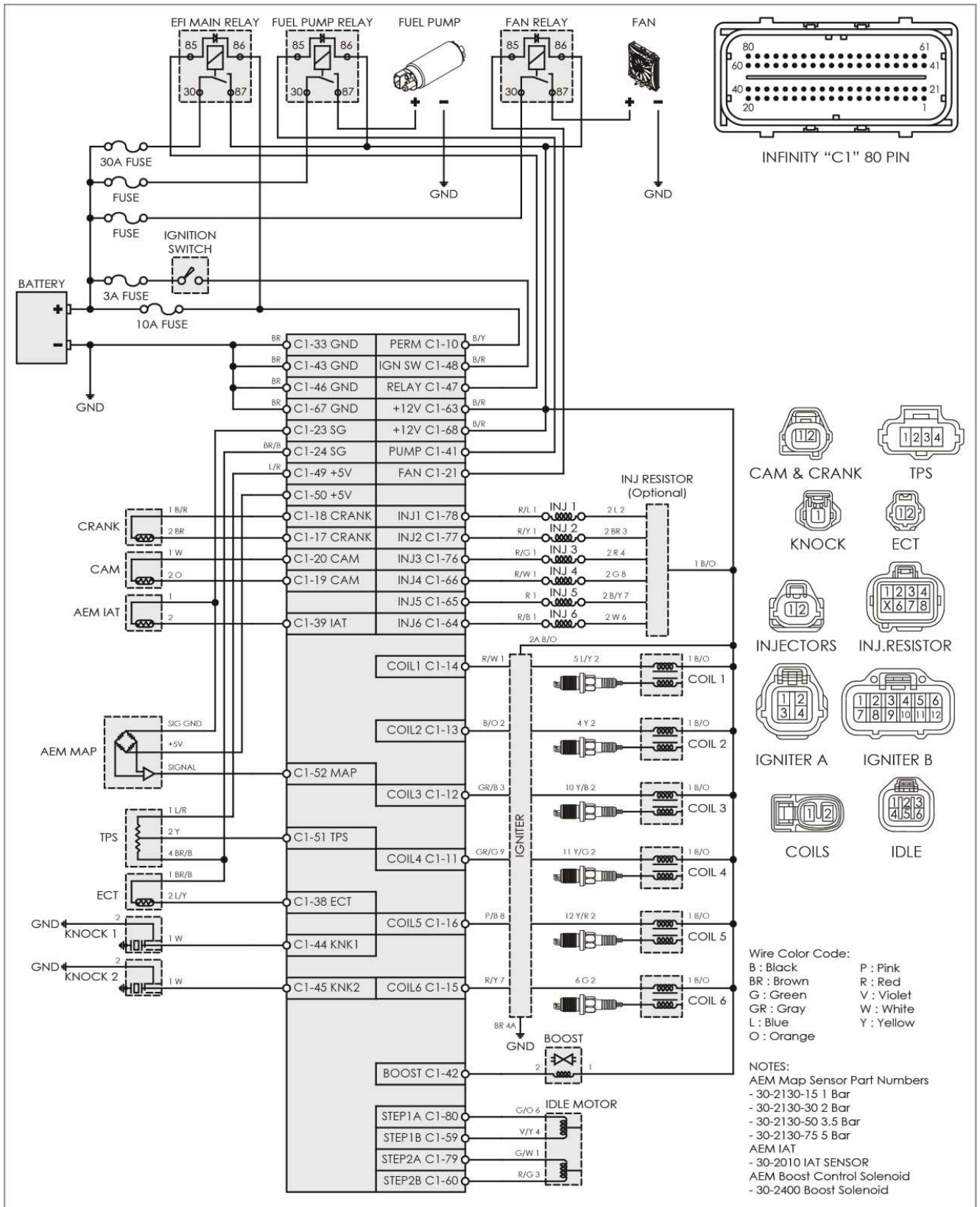

| | | | | |
|---|---|---|---|---|
| INFINITY AEM | Drawing: 2003-05 Mitsubishi EVO VIII | | | |
| | ECU: Infinity-6/8h | Date: 02/19/2014 | Rev: A | Engineer: Nakano |

# EVO IX Pinout, Infinity-6/8h



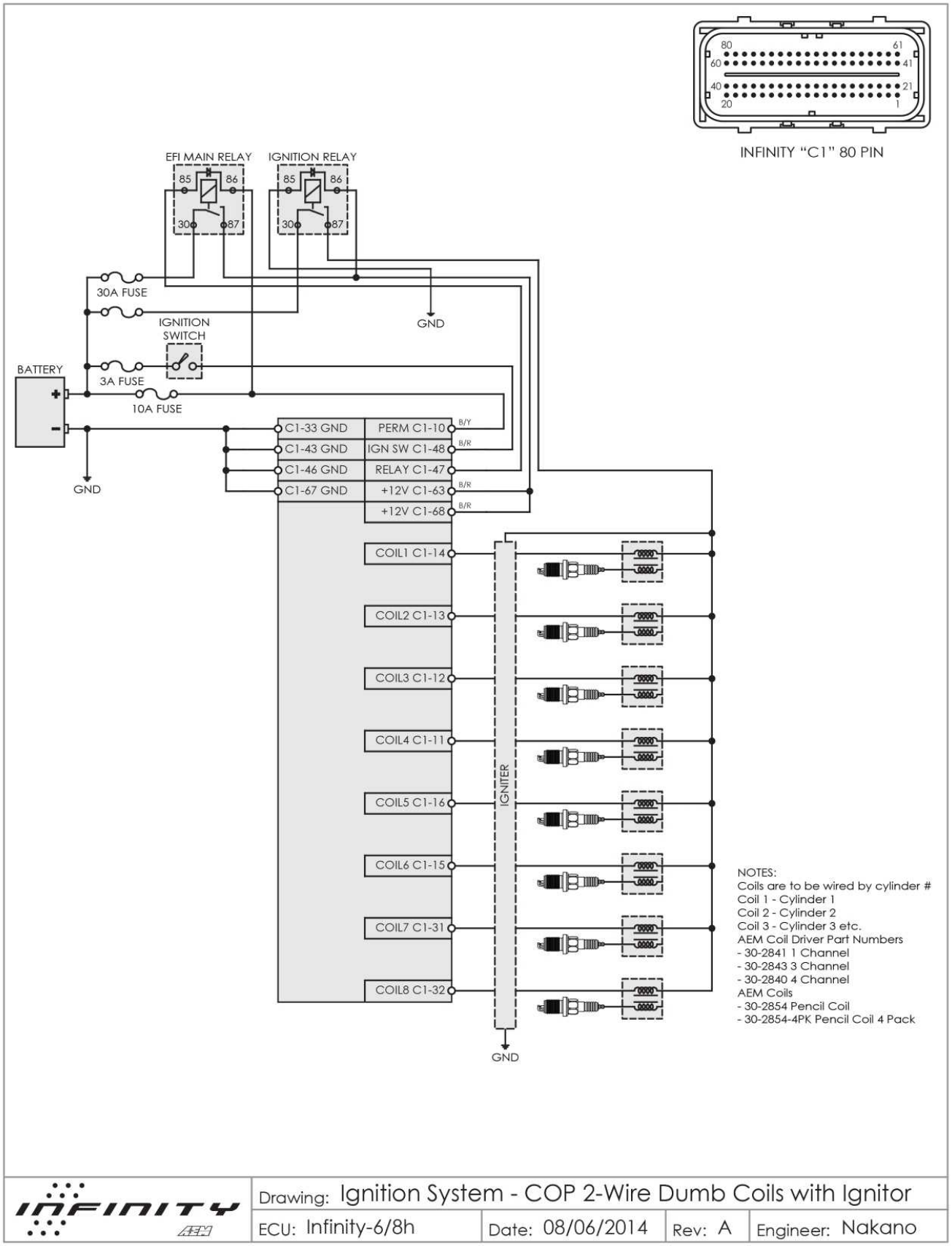

| | | | | |
|---|---|---|---|---|
| | Drawing: 2006 Mitsubishi EVO IX | | | |
| | ECU: Infinity-6/8h | Date: 02/20/2014 | Rev: A | Engineer: Nakano |

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

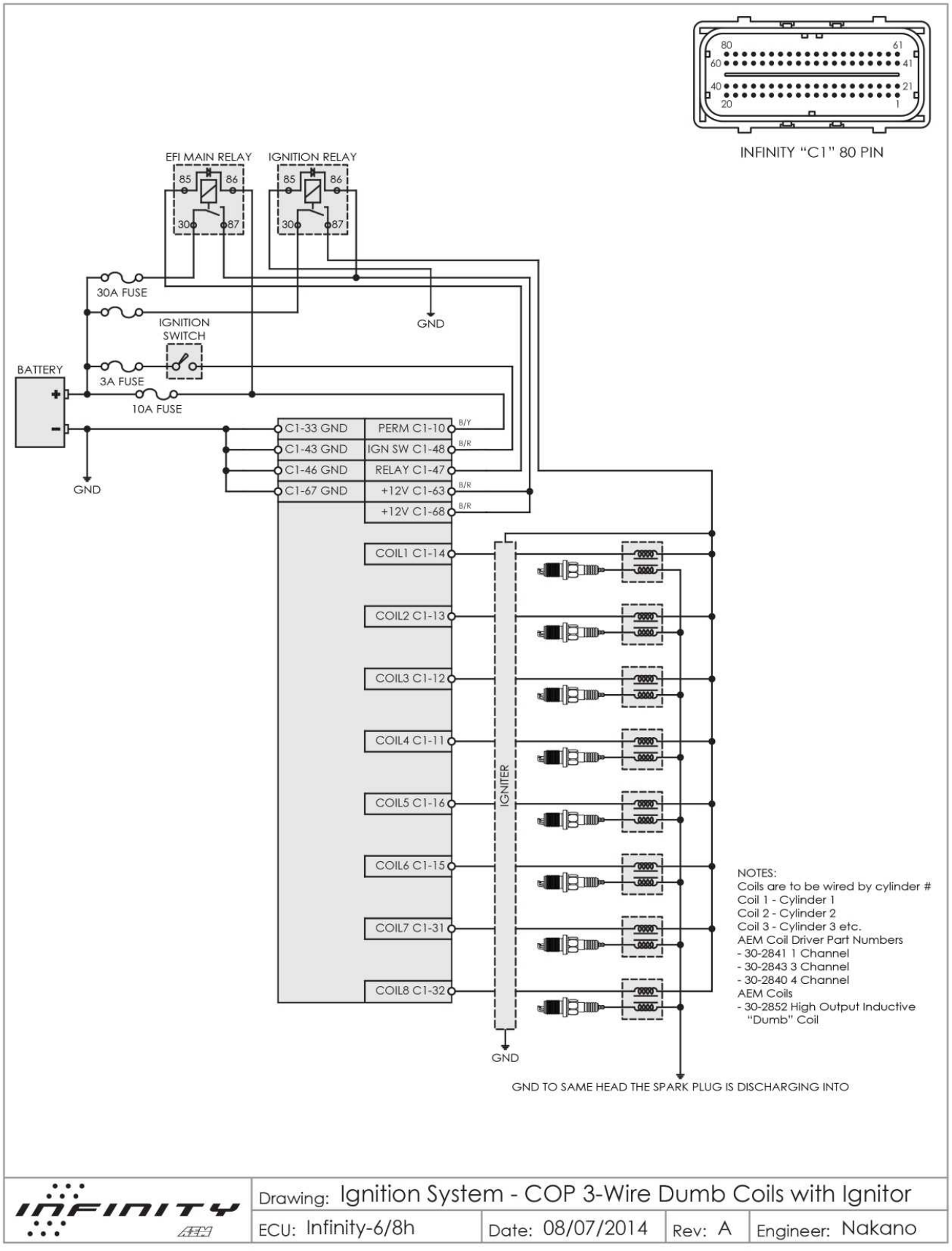



| | | | | |
|---|---|---|---|---|
| INFINITY AEM | Drawing: 1993-98 Toyota Supra 2JZGTE | | | |
| | ECU: Infinity-6/8h | Date: 02/24/2014 | Rev: A | Engineer: Nakano |

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

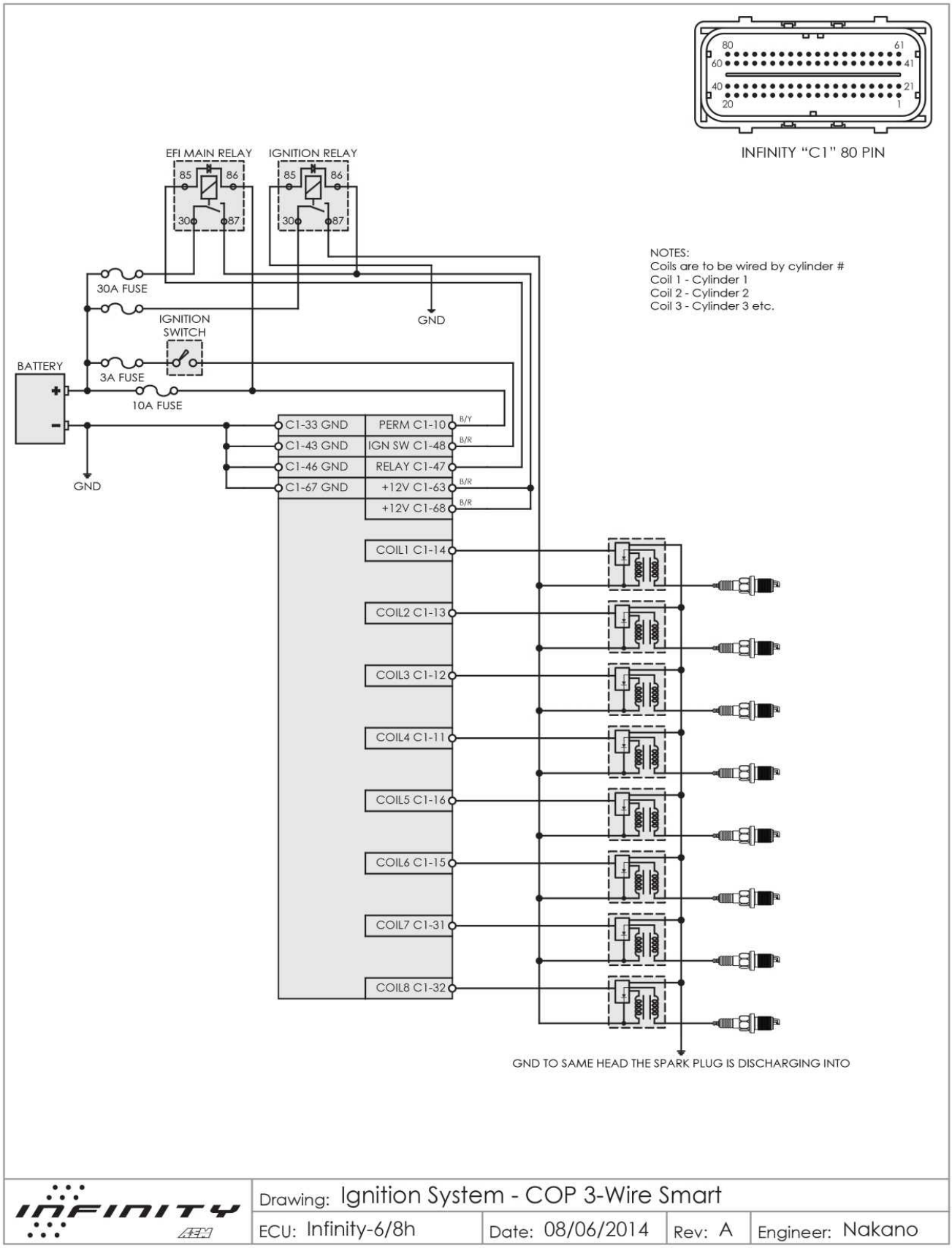


# Ignition System – COP 3 Wire "Dumb" Coils with Ignitor, Infinity-6/8h

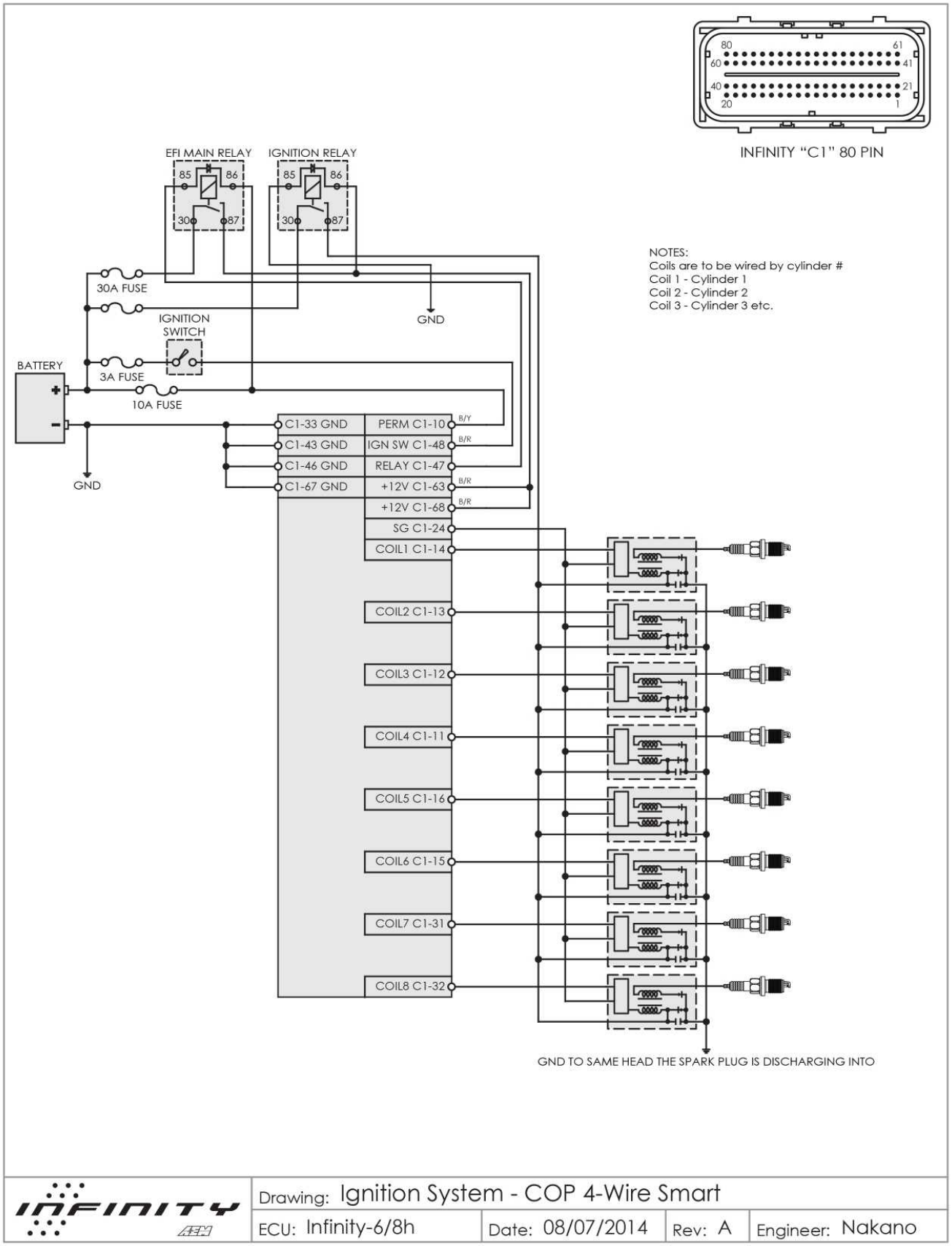



| | | | | |
|---|---|---|---|---|
| INFINITY AEM | Drawing: Ignition System - COP 3-Wire Dumb Coils with Ignitor | | | |
| | ECU: Infinity-6/8h | Date: 08/07/2014 | Rev: A | Engineer: Nakano |

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



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

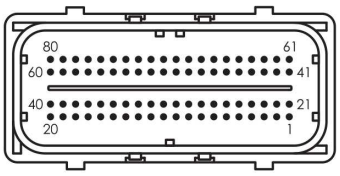



| | | | | |
|---|---|---|---|---|
| INFINITY | Drawing: Ignition System - COP 4-Wire Smart | | | |
| | ECU: Infinity-6/8h | Date: 08/07/2014 | Rev: A | Engineer: Nakano |

# GM_LS3_DBW_Wiring__Infinity-6_

**ACCELERATOR PEDAL POSITION (APP) SENSOR**

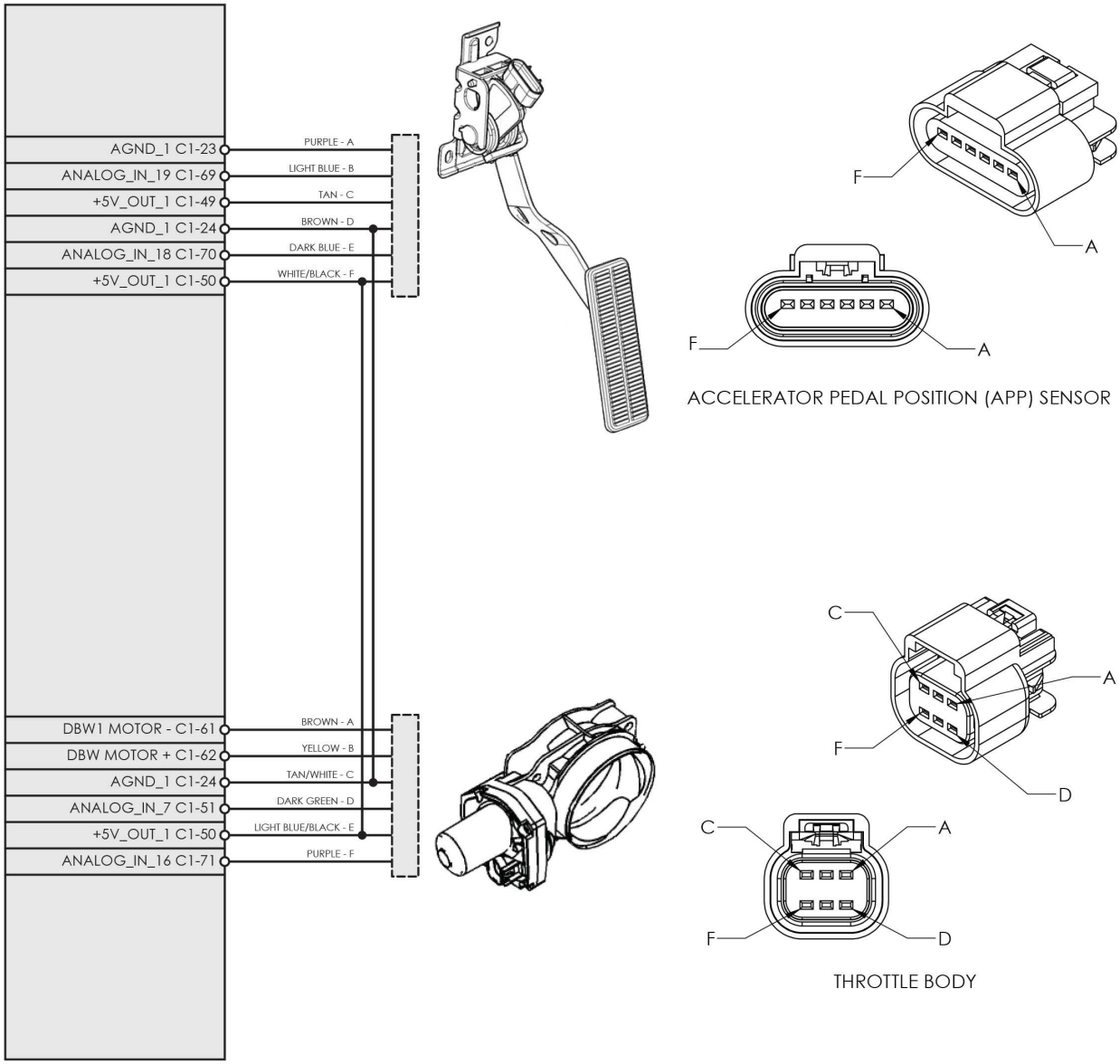
| GM PIN | INFINITY PIN | WIRE COLOR | FUNCTION |
|---|---|---|---|
| A | C1-23 | Purple | Sensor Ground |
| B | C1-69 | Light Blue | Accelerator Pedal Position (APP) Sensor 2 Signal |
| C | C1-49 | Tan | +5 Volt Reference |
| D | C1-24 | Brown | Sensor Ground |
| E | C1-70 | Dark Blue | Accelerator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



INFINITY "C1" 80 PIN

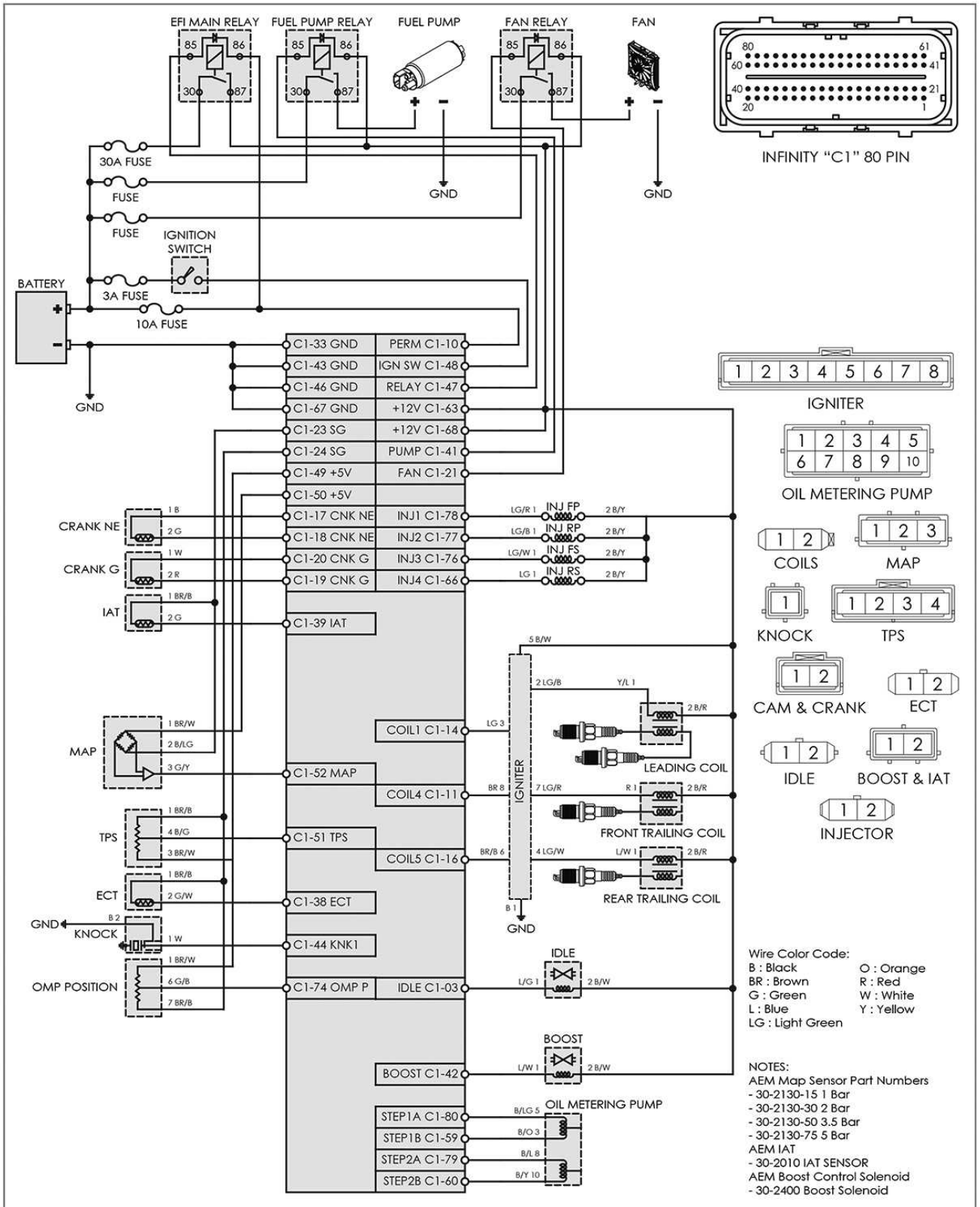
**THROTTLE BODY**

| 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 |




| | | | | |
|---|---|---|---|---|
| INFINITY AEM | Drawing: GM LS3 ACCELERATOR PEDAL & DBW THROTTLE BODY | | | |
| | ECU: Infinity-6/8h | Date: 08/04/2014 | Rev: A | Engineer: Nakano |

# Mazda RX7 FD Wiring, Infinity 6



# 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.

UEGO oxygen sensors are considered wear items and are not covered under warranty.

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.