

# Instruction Manual



## 30-71XX Infinity Hardware Specification



### STOP!

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

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

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

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

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

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

AEM Performance Electronics  
AEM Performance Electronics, 2205 126th Street Unit A, Hawthorne, CA 90250  
Phone: (310) 484-2322 Fax: (310) 484-0152  
<http://www.aemelectronics.com>  
Instruction Part Number: 10-71XX-Hardware  
Document Build 12/14/2015

# Table of Contents

## Hardware

Infinity Hardware Specifications .....	1
ECU Installation Dimensions Infinity-8/10/12.....	3

## Wiring, Pinouts and Schematics

Wiring.....	4
Universal Pinout, Infinity-8/10/12.....	4
Connector Views Infinity-8/10/12.....	16
Example System Schematics.....	16
Power Distribution, Infinity-8/10/12.....	18
Internal UEGO, Infinity-8/10/12.....	19
95 BMW E36 M3, Infinity-8/10/12.....	20
EVO VIII, Infinity-8/10/12.....	21
EVO IX Pinout, Infinity-8/10/12.....	22
93–98 Toyota Supra 2JZGTE, Infinity-8/10/12.....	23
Ignition System – COP 2 Wire "Dumb" Coils with Ignitor, Infinity-8/10/12.....	24
Ignition System – COP 3 Wire "Dumb" Coils with Ignitor, Infinity-8/10/12.....	25
Ignition System – COP 3 Wire "Smart" Coils, Infinity-8/10/12.....	26
Ignition System – COP 4 Wire "Smart" Coils, Infinity-8/10/12.....	27
Ignition System – COP 5 Wire "Smart" Coils, Infinity-8/10/12.....	28
GM LS3 DBW Wiring, Infinity-8/10/12.....	29

# Hardware

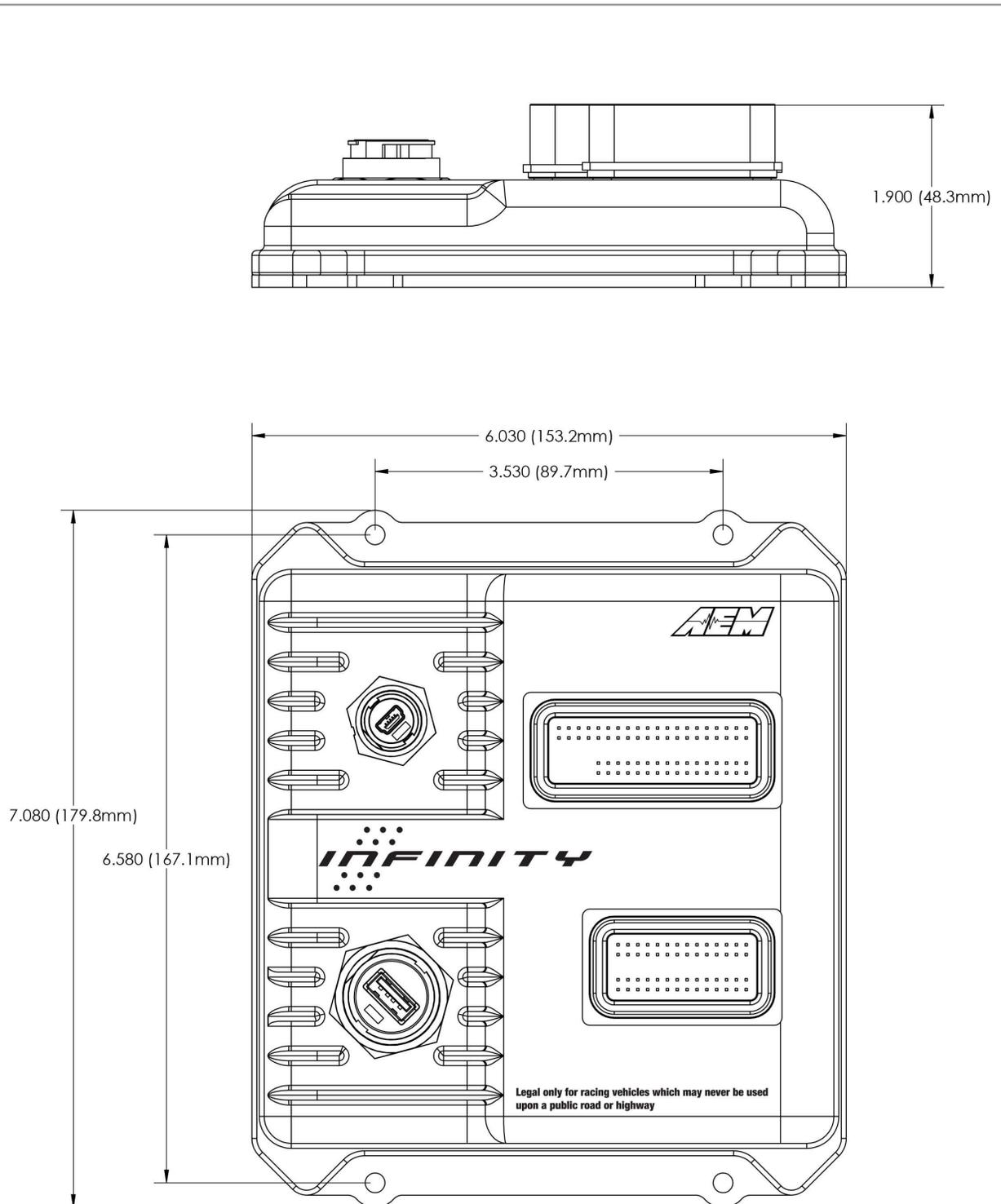
## Infinity Hardware Specifications

Specifications	Infinity-6	Infinity-8h	Infinity-8	Infinity-10	Infinity-812
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	10
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

Specifications	Infinity-6	Infinity-8h	Infinity-8	Infinity-10	Infinity-812
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.

## ECU Installation Dimensions Infinity-8/10/12



Drawing: Infinity-8/10/12 Dimensions

ECU: Infinity-8/10/12

Date: 07/23/2014

Rev: A

Engineer: Nakano

# Wiring, Pinouts and Schematics

## Wiring

### Universal Pinout, Infinity-8/10/12

Infinity Pin	Hrdwr Ref.	Hardware Specification	Notes
C1-1	Lowside 4	Lowside switch, 4A max, NO internal flyback diode.  No pullup	See Setup Wizard Page "Output Function Assignment" for setup options.
C1-2	Lowside 5	Lowside switch, 4A max with internal flyback diode. Inductive load should NOT have full time power.  No pullup	See Setup Wizard Page "Output Function Assignment" for setup options.
C1-3	Lowside 6	Lowside switch, 4A max with internal flyback diode. Inductive load should NOT have full time power.  No pullup	See Setup Wizard Page "Output Function Assignment" for setup options.
C1-4	UEGO 1 Heat	Bosch UEGO controller	Lowside switch for UEGO heater control. Connect to pin 4 of Bosch UEGO sensor. NOTE that pin 3 of the Sensor is heater (+) and must be power by a fused/switched 12V supply.
C1-5	UEGO 1 IA		Trim Current signal. Connect to pin 2 of Bosch UEGO sensor
C1-6	UEGO 1 IP		Pumping Current signal. Connect to pin 6 of Bosch UEGO sensor
C1-7	UEGO 1 UN		Nernst Voltage signal. Connect to pin 1 of Bosch UEGO sensor
C1-8	UEGO 1 VM		Virtual Ground signal. Connect to pin 5 of Bosch UEGO sensor.
C1-9	Flash Enable	10K pulldown	Not usually needed for automatic firmware updates through Infinity Tuner. If connection errors occur during update, connect 12 volts to this pin before proceeding with upgrade. Disconnect the 12 volts signal after the update.
C1-10	Battery Perm Power	Dedicated power management CPU	Full time battery power. MUST be powered before the ignition switch input is triggered (See C1-65).

Infinity Pin	Hrdwr Ref.	Hardware Specification	Notes
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.
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	Lowside 2	Lowside switch, 4A max, NO internal flyback diode.  No pullup	See Setup Wizard Page "Output Function Assignment" for setup options.
C1-18	Lowside 3	Lowside switch, 4A max with internal flyback diode. Inductive load should NOT have full time power.  No pullup	See Setup Wizard Page "Output Function Assignment" for setup options.
C1-19	Analog Sensor Ground	Dedicated analog ground	Analog 0-5V sensor ground
C1-20	Analog Sensor Ground	Dedicated analog ground	Analog 0-5V sensor ground

Infinity Pin	Hrdwr Ref.	Hardware Specification	Notes
C1-21	Crankshaft Position Sensor Hall	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	10K pullup to 12V. Will work with ground or floating switches.	See Setup Wizard page Cam/Crank for options.
C1-23	Digital 2	10K pullup to 12V. Will work with ground or floating switches.	See Setup Wizard page Cam/Crank for options.
C1-24	Digital 3	10K pullup to 12V. Will work with ground or floating switches.	See Setup Wizard page "Input Function Assignments" for setup options.
C1-25	Digital 4	10K pullup to 12V. Will work with ground or floating switches.	See Setup Wizard page "Input Function Assignments" for setup options.
C1-26	Digital 5	10K pullup to 12V. Will work with ground or floating switches.	See Setup Wizard page "Input Function Assignments" for setup options.
C1-27	Knock Sensor 1	Dedicated knock signal processor	See Setup Wizard page Knock Setup for options.
C1-28	Knock Sensor 2	Dedicated knock signal processor	See Setup Wizard page Knock Setup for options.
C1-29	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.
C1-30	Battery Ground	Battery Ground	Connect directly to battery ground
C1-31	CANL A	Dedicated High Speed CAN Transceiver	Recommend twisted pair (one twist per 2") with terminating resistor. Contact AEM for additional information.
C1-32	CANH A	Dedicated High Speed CAN Transceiver	Recommend twisted pair (one twist per 2") with terminating resistor. Contact AEM for additional information.
C1-33	Lowside 1	Lowside switch, 4A max with internal flyback diode. Inductive load should NOT have full time power.  No pullup	See Setup Wizard Page "Output Function Assignment" for setup options.

Infinity Pin	Hrdwr Ref.	Hardware Specification	Notes
C1-34	Lowside 0	Lowside switch, 4A max, NO internal flyback diode.  No pullup	See Setup Wizard Page "Output Function Assignment" for setup options.
C1-35	Analog 7	12 bit A/D, 100K pullup to 5V	Default primary Throttle Position input.  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.
C1-36	Analog 8	12 bit A/D, 100K pullup to 5V	Default Manifold Pressure Input.  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.
C1-37	Analog 9	12 bit A/D, 100K pullup to 5V	Default Fuel Pressure Input.  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.
C1-38	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 the Setup Wizard "Input Function Assignments" page for options.
C1-39	Analog 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 Setup Wizard "Input Function Assignments" page for options.

Infinity Pin	Hrdwr Ref.	Hardware Specification	Notes
C1-40	Analog 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. See the Setup Wizard "Input Function Assignments" page for options.
C1-41	+5V Sensor Power	Regulated, fused +5V supply for sensor power	Analog sensor power
C1-42	+5V Sensor Power	Regulated, fused +5V supply for sensor power	Analog sensor power
C1-43	Highside 1	0.7A max, High Side Solid State Relay	See Setup Wizard page "Output Function Assignment" for configuration options.
C1-44	Highside 0	0.7A max, High Side Solid State Relay	See Setup Wizard page "Output Function Assignment" for configuration options.
C1-45	Crankshaft Position Sensor VR+	Differential Variable Reluctance Zero Cross Detection	See Setup Wizard page Cam/Crank for options.
C1-46	Crankshaft Position Sensor VR-		See Setup Wizard page Cam/Crank for options.
C1-47	Camshaft Position Sensor 1 VR-	Differential Variable Reluctance Zero Cross Detection	See Setup Wizard page Cam/Crank for options.
C1-48	Camshaft Position Sensor 1 VR+		See Setup Wizard page Cam/Crank for options.
C1-49	VR+ 2	Differential Variable Reluctance Zero Cross Detection	See the Setup Wizard "Input Function Assignments" page for options.
C1-50	VR- 2		
C1-51	VR- 3	Differential Variable Reluctance Zero Cross Detection	See the Setup Wizard "Input Function Assignments" page for options.
C1-52	VR+ 3		
C1-53	DBW1 Motor -	5.0A max Throttle Control Hbridge Drive	+12V to close.
C1-54	DBW1 Motor +	5.0A max Throttle Control Hbridge Drive	+12V to open.
C1-55	Battery Ground	Power Ground	Connect directly to battery ground

Infinity Pin	Hrdwr Ref.	Hardware Specification	Notes
C1-56	Injector 6	Saturated or peak and hold, 3A max continuous	Injector 6
C1-57	Injector 5	Saturated or peak and hold, 3A max continuous	Injector 5
C1-58	Injector 4	Saturated or peak and hold, 3A max continuous	Injector 4
C1-59	Injector 3	Saturated or peak and hold, 3A max continuous	Injector 3
C1-60	Battery Ground	Power Ground	Connect directly to battery ground
C1-61	Main Relay Power Input	12 volt power from relay	12 volt power from relay. Relay must be controlled by EFI Main Relay Switched Ground Output, pin C1-29 above.
C1-62	Injector 2	Saturated or peak and hold, 3A max continuous	Injector 2
C1-63	Injector 1	Saturated or peak and hold, 3A max continuous	Injector 1
C1-64	Main Relay Power Input	12 volt power from relay	12 volt power from relay. Relay must be controlled by +12V Relay Control signal pin C1-29 above.
C1-65	Ignition Switch	10K pulldown	Full time battery power must be available at C1-10 before this input is triggered.
C1-66	Analog Temp 1	12 bit A/D, 2.49K pullup to 5V	Default Coolant Temperature Input.
C1-67	Analog Temp 2	12 bit A/D, 2.49K pullup to 5V	Default Air Temperature Input.
C1-68	Analog Temp 3	12 bit A/D, 2.49K pullup to 5V	Normally used for Oil Temp input. See the Setup Wizard "Input Function Assignments" page for options.
C1-69	Stepper 2A	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	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.

Infinity Pin	Hrdwr Ref.	Hardware Specification	Notes
C1-71	Stepper 2B	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	Battery Ground	Battery Ground	Connect directly to battery ground
C2-1	DBW2 Motor +	5.0A max Throttle Control Hbridge Drive	+12V to open.
C2-2	DBW2 Motor -	5.0A max Throttle Control Hbridge Drive	+12V to close.
C2-3	Battery Ground	Battery Ground	Connect directly to battery ground
C2-4	Injector 7	Saturated or peak and hold, 3A max continuous	Injector 7
C2-5	Injector 8	Saturated or peak and hold, 3A max continuous	Injector 8
C2-6	Injector 9	Saturated or peak and hold, 3A max continuous	Injector 9.
C2-7	Injector 10	Saturated or peak and hold, 3A max continuous	Injector 10.
C2-8	Battery Ground	Power Ground	Connect directly to battery ground.
C2-9	Main Relay Power Input	12 volt power from relay	12 volt power from relay. Relay must be controlled by +12V Relay Control signal, pin C1-29 above.
C2-10	Injector 11	Saturated or peak and hold, 3A max continuous	Not used
C2-11	Injector 12	Saturated or peak and hold, 3A max continuous	Not used
C2-12	Analog 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. See the Setup Wizard "Input Function Assignments" page for options.

Infinity Pin	Hrdwr Ref.	Hardware Specification	Notes
C2-13	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. Normally used as DBW APP1. See the Setup Wizard "Input Function Assignments" page for options.
C2-14	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. Normally used as DBW APP2. See the Setup Wizard "Input Function Assignments" page for options.
C2-15	Analog Temp 4	12 bit A/D, 2.49K pullup to 5V	Normally used as Charge Out Temperature input. See the Setup Wizard "Input Function Assignments" page for options.
C2-16	Analog Temp 5	12 bit A/D, 2.49K pullup to 5V	Normally used as Airbox Temperature input. See the Setup Wizard "Input Function Assignments" page for options.
C2-17	Analog Temp 6	12 bit A/D, 2.49K pullup to 5V	Normally used as Fuel Temperature input. See the Setup Wizard "Input Function Assignments" page for options.
C2-18	Analog 13	12 bit A/D, 100K pullup to 5V	Default Oil Pressure sensor input.  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.
C2-19	Analog 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. See the Setup Wizard "Input Function Assignments" page for options.

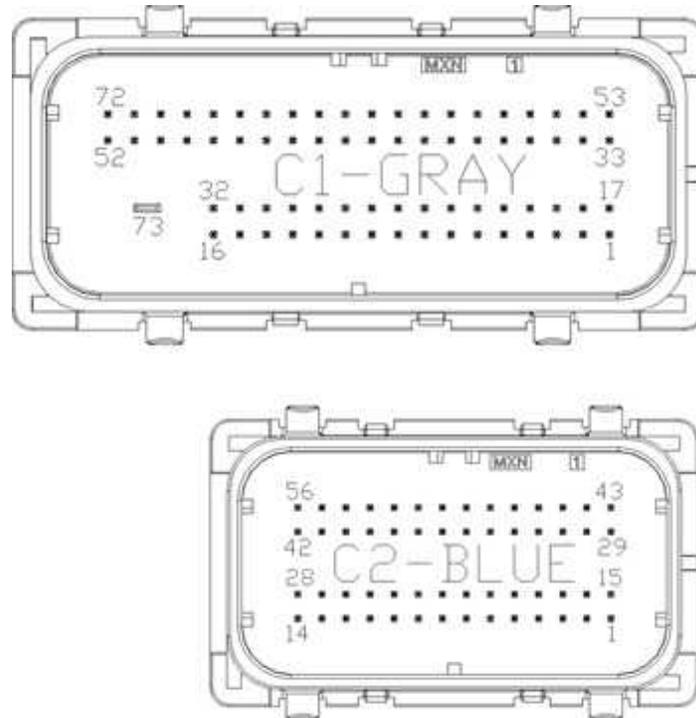
Infinity Pin	Hrdwr Ref.	Hardware Specification	Notes
C2-20	Analog 15	12 bit A/D, 100K pullup to 5V	Default Exhaust Backpressure Sensor Input  0-5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU. See the Setup Wizard "Input Function Assignments" page for options.
C2-21	Analog 16	12 bit A/D, 100K pullup to 5V	Default DBW1_TPSB input.  0-5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU.
C2-22	+5V Sensor Power	Regulated, fused +5V supply for sensor power	Analog sensor power
C2-23	+5V Sensor Power	Regulated, fused +5V supply for sensor power	Analog sensor power
C2-24	+5V Sensor Power	Regulated, fused +5V supply for sensor power	Analog sensor power
C2-25	VR+ 5	Differential Variable Reluctance Zero Cross Detection	See the Setup Wizard "Input Function Assignments" page for options.
C2-26	VR- 5		
C2-27	VR- 4	Differential Variable Reluctance Zero Cross Detection	See the Setup Wizard "Input Function Assignments" page for options.
C2-28	VR+ 4		
C2-29	Lowside 9	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 "Output Function Assignment" for setup options.
C2-30	Analog Sensor Ground	Dedicated analog ground	Analog 0-5V sensor ground

Infinity Pin	Hrdwr Ref.	Hardware Specification	Notes
C2-31	Analog Sensor Ground	Dedicated analog ground	Analog 0-5V sensor ground
C2-32	Analog Sensor Ground	Dedicated analog ground	Analog 0-5V sensor ground
C2-33	Analog 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 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. See the Setup Wizard "Input Function Assignments" page for options.
C2-35	Analog 22	12 bit A/D, 100K pullup to 5V	0-5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU. See the Setup Wizard "Input Function Assignments" page for options.
C2-36	Analog 23	12 bit A/D, 100K pullup to 5V	Default Charge Out Pressure Sensor Input  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 "Input Function Assignments" page for options.
C2-37	Digital 6	No pullup. Accepts 12V switch inputs	Input can be assigned to different pins. See Setup Wizard page Input Function Assignments for input mapping options.

Infinity Pin	Hrdwr Ref.	Hardware Specification	Notes
C2-38	Digital 7	No pullup. Accepts 12V switch inputs	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	Battery Ground	Battery Ground	Connect directly to battery ground
C2-40	Battery Ground	Battery Ground	Connect directly to battery ground
C2-41	CanH B	Dedicated High Speed CAN Transceiver	Not used
C2-42	CanL B	Dedicated High Speed CAN Transceiver	Not used
C2-43	Lowside 8	Lowside switch, 4A max with internal flyback diode. Inductive load should NOT have full time power.  12V pullup	See Setup Wizard Page "Output Function Assignment" for setup options.
C2-44	Lowside 7	Lowside switch, 4A max with internal flyback diode. Inductive load should NOT have full time power.  No pullup	See Setup Wizard Page "Output Function Assignment" for setup options.
C2-45	UEGO 2 VM	Bosch UEGO Controller	Virtual Ground signal. Connect to pin 5 of Bosch UEGO sensor.
C2-46	UEGO 2 UN		Nernst Voltage signal. Connect to pin 1 of Bosch UEGO sensor
C2-47	UEGO 2 IP		Pumping Current signal. Connect to pin 6 of Bosch UEGO sensor
C2-48	UEGO 2 IA		Trim Current signal. Connect to pin 2 of Bosch UEGO sensor
C2-49	UEGO 2 HEAT		Lowside switch for UEGO heater control. Connect to pin 4 of Bosch UEGO sensor. NOTE that pin 3 of the Sensor is heater (+) and must be power by a fused/switched 12V supply.
C2-50	Battery Perm Power	Dedicated power management CPU	Full time battery power. MUST be powered before the ignition switch input is triggered (See C1-65).

<b>Infinity Pin</b>	<b>Hrdwr Ref.</b>	<b>Hardware Specification</b>	<b>Notes</b>
C2-51	Coil 7	25 mA max source current	0-5V Falling edge fire. DO NOT connect directly to coil primary. Must use an ignitor OR CDI that accepts a FALLING edge fire signal.
C2-52	Coil 8	25 mA max source current	0-5V Falling edge fire. DO NOT connect directly to coil primary. Must use an ignitor OR CDI that accepts a FALLING edge fire signal.
C2-53	Coil 9	25 mA max source current	0-5V Falling edge fire. DO NOT connect directly to coil primary. Must use an ignitor OR CDI that accepts a FALLING edge fire signal.
C2-54	Coil 10	25 mA max source current	0-5V Falling edge fire. DO NOT connect directly to coil primary. Must use an ignitor OR CDI that accepts a FALLING edge fire signal.
C2-55	Highside 2	Highside switch, 0.7A max, Solid State Relay, NO internal flyback diode.	See Setup Wizard Page "Output Function Assignment" for setup options.
C2-56	Not used	Not used	Not used

## Connector Views Infinity-8/10/12



## 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.

**30-3809 Universal modular V8 harness system for Infinity-6/8h 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.

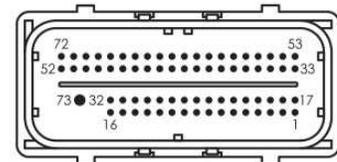
**30-3706 Universal Mini Flying Lead for Infinity-6/8h systems**

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.

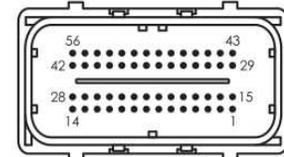
The following schematics show examples for wiring a basic Infinity system. Examples are included for both Infinity-6/8h and Infinity-8/10/12 hardware platforms. ***The power, ground and accessory relay sections of the following schematics must be strictly followed to avoid inconsistent power sequencing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

# Power Distribution, Infinity-8/10/12

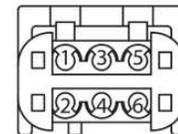
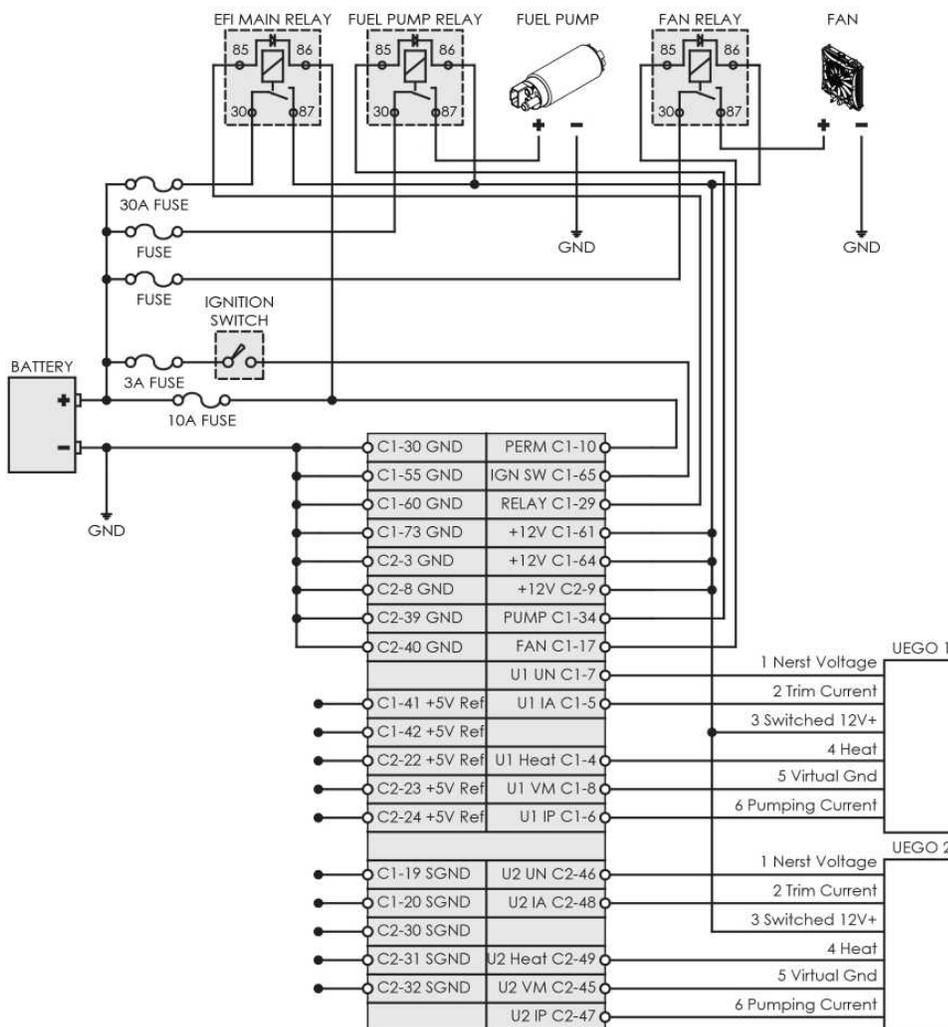
NAME	FUNCTION
GND	Battery ground
PERM	Fused connection to battery positive terminal (+12V, always hot)
IGN SW	Fused connection to vehicle ignition switch (+12V in RUN/CRANK only)
RELAY	Switched ground from ECU connected to relay coil primary negative
+12V	Relay driven +12V power source for ECU power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



INFINITY "C1" 73 PIN



INFINITY "C2" 56 PIN



NOTES:  
 VERY IMPORTANT  
 ALL user installed auxiliary 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.



Drawing: Power Distribution

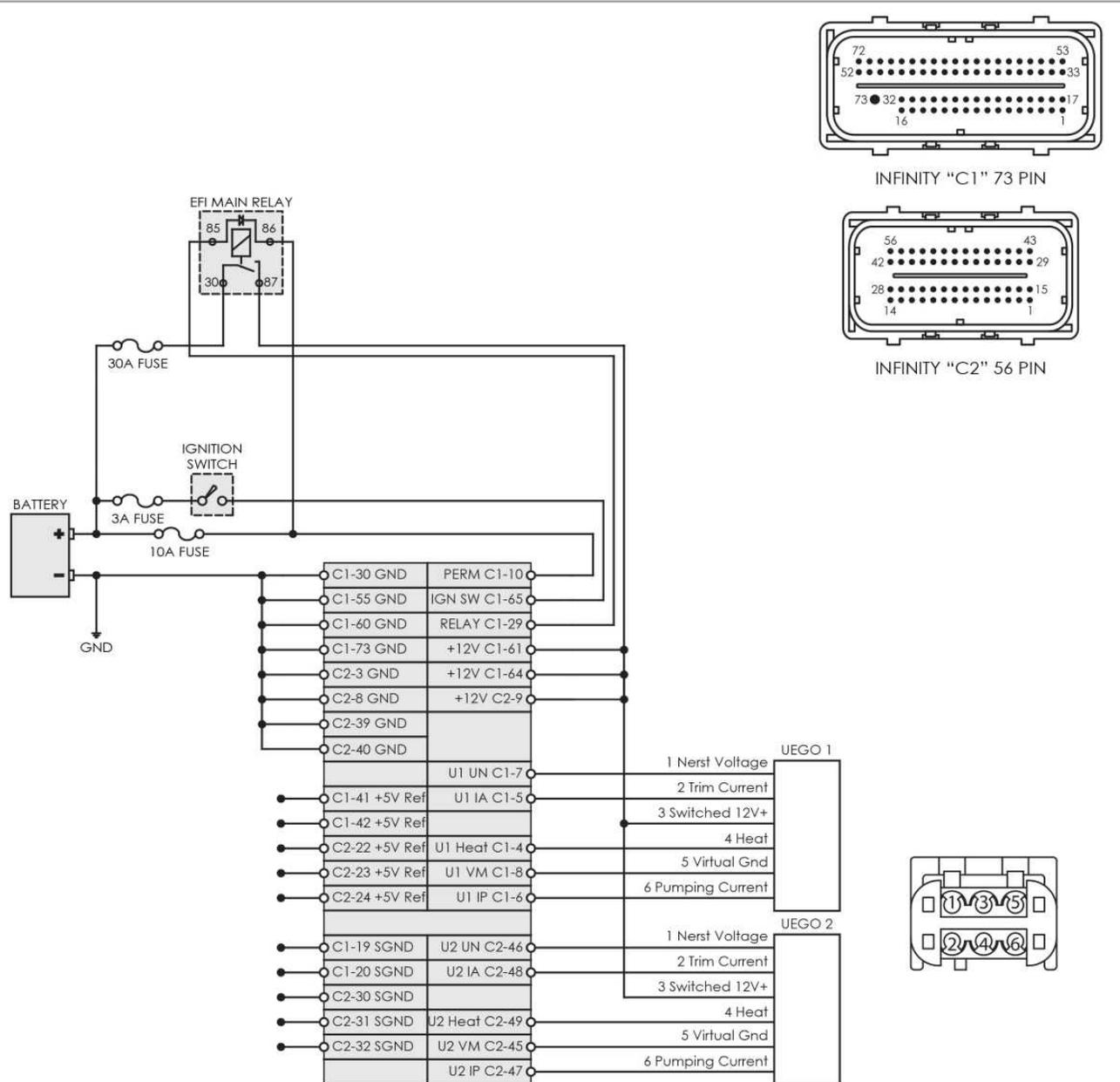
ECU: Infinity-8/10/12

Date: 12/14/2015

Rev: B

Engineer: Nakano

# Internal UEGO, Infinity-8/10/12



NOTES:  
 VERY IMPORTANT  
 ALL user installed auxiliary 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.



Drawing: Internal Wideband UEGO Sensors

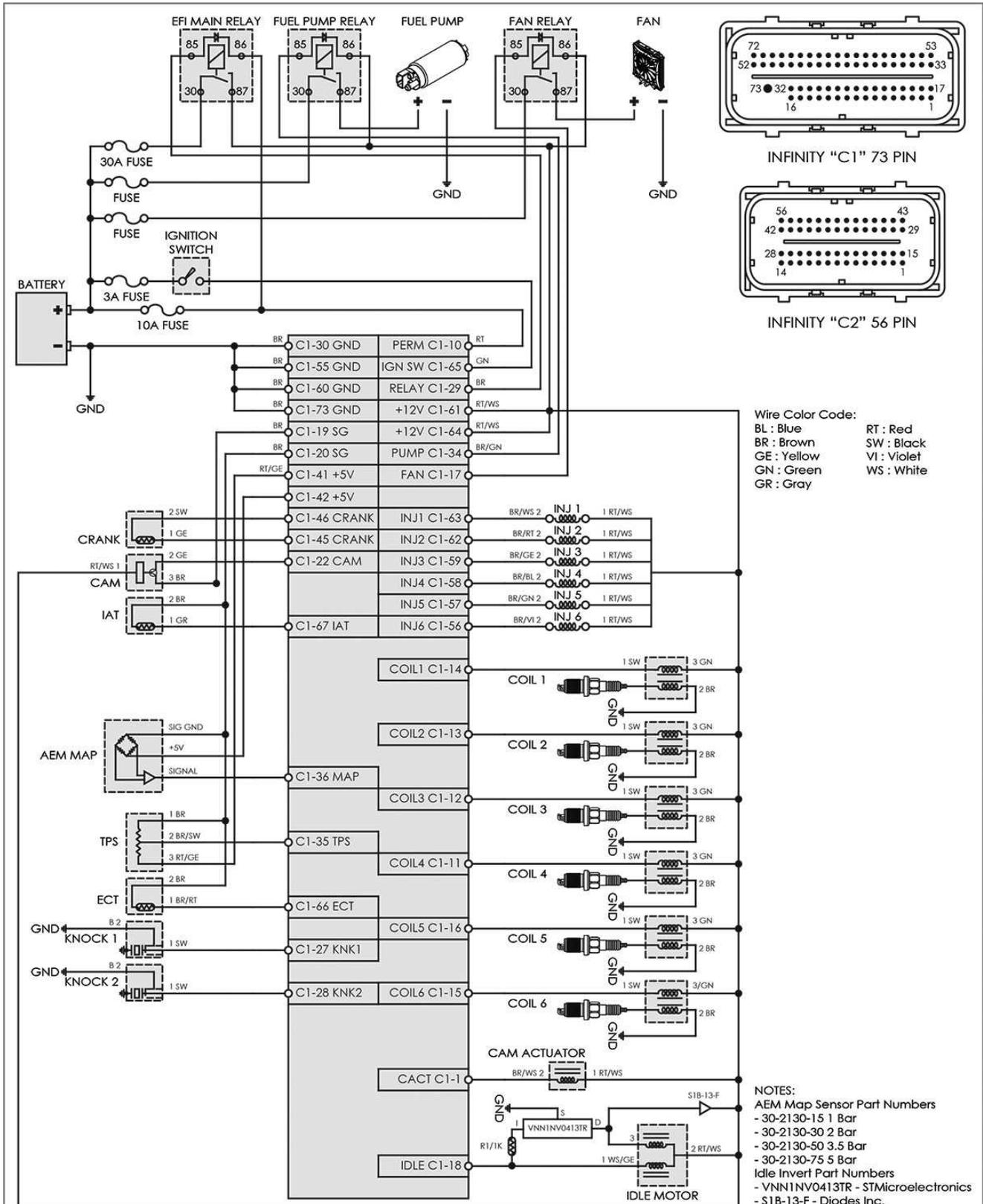
ECU: Infinity-8/10/12

Date: 12/14/2015

Rev: A

Engineer: Nakano

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



Drawing: 1995 BMW M3 E36 M50

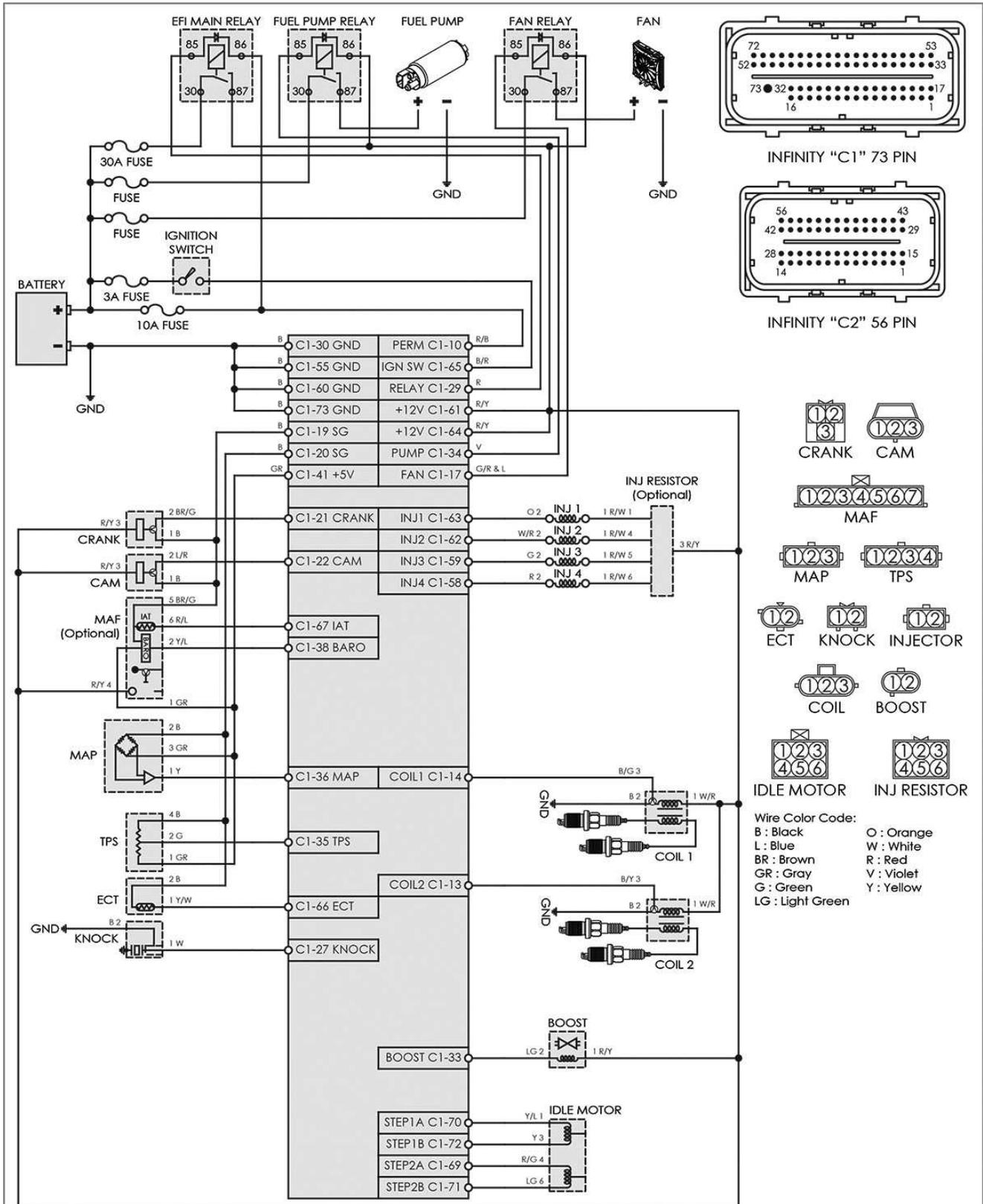
ECU: Infinity-8/10/12

Date: 02/20/2014

Rev: A

Engineer: Nakano

# EVO VIII, Infinity-8/10/12



Drawing: 2003-05 Mitsubishi EVO VIII

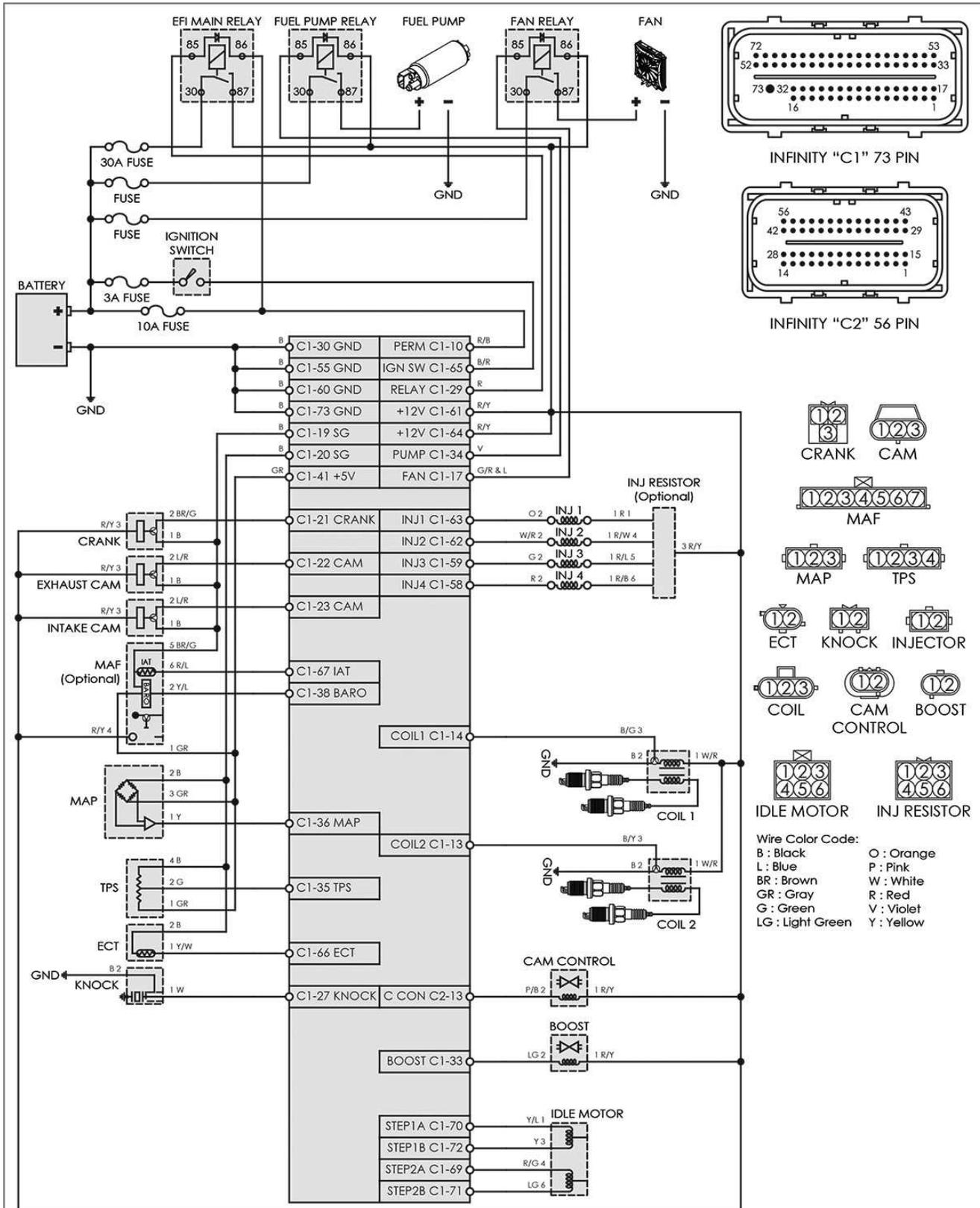
ECU: Infinity-8/10/12

Date: 02/19/2014

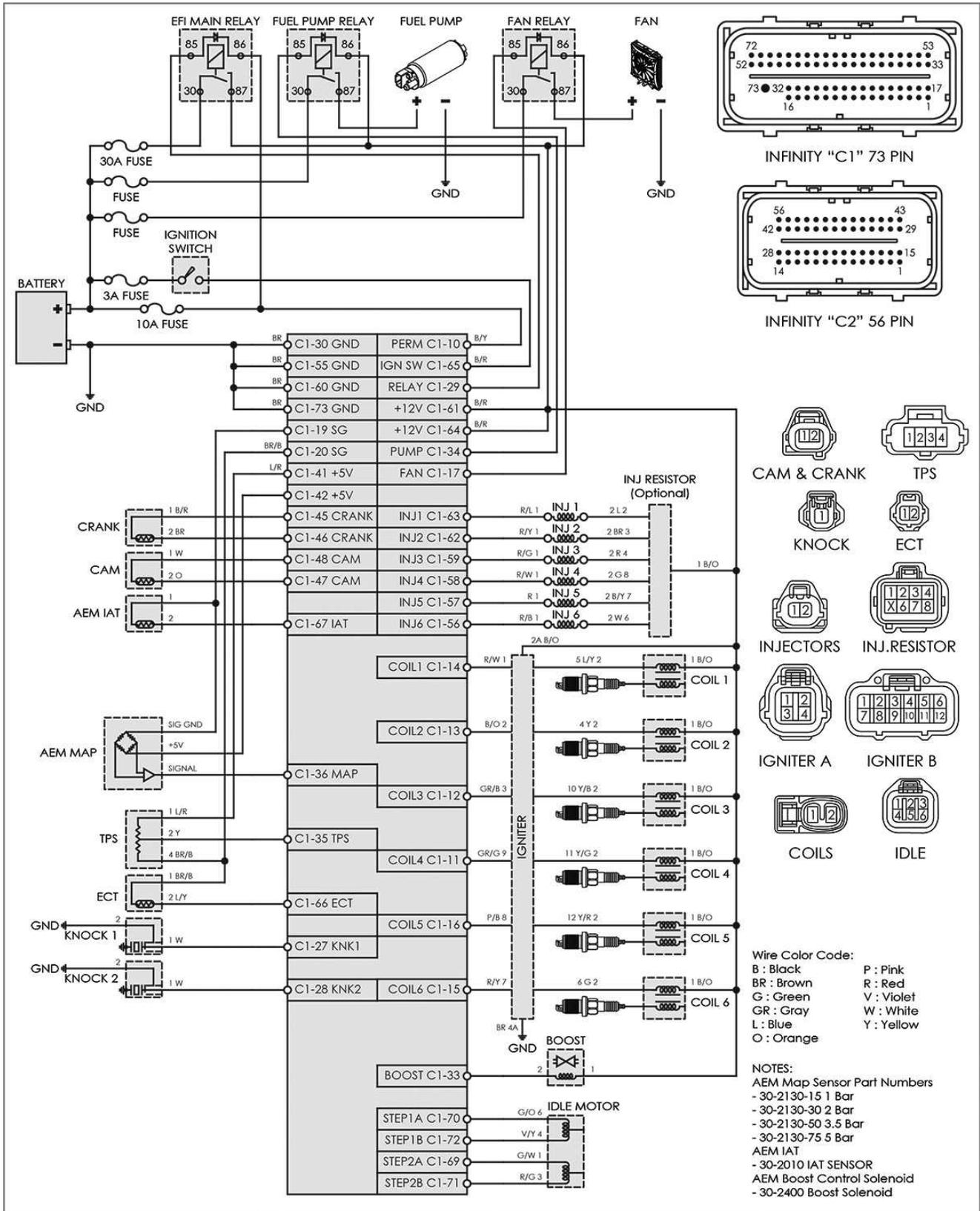
Rev: A

Engineer: Nakano

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



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



Drawing: 1993-98 Toyota Supra 2JZGTE

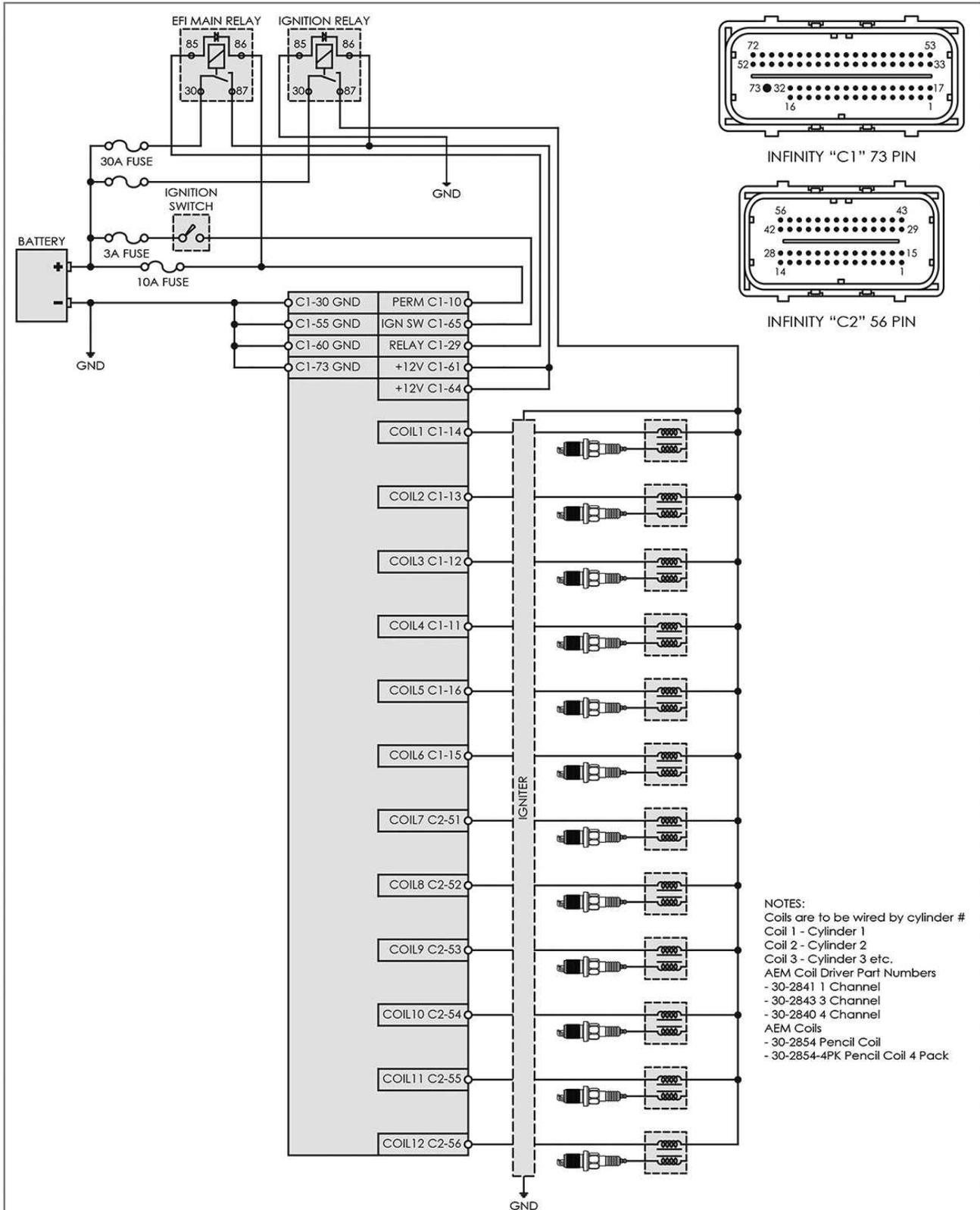
ECU: Infinity-8/10/12

Date: 02/24/2014

Rev: A

Engineer: Nakano

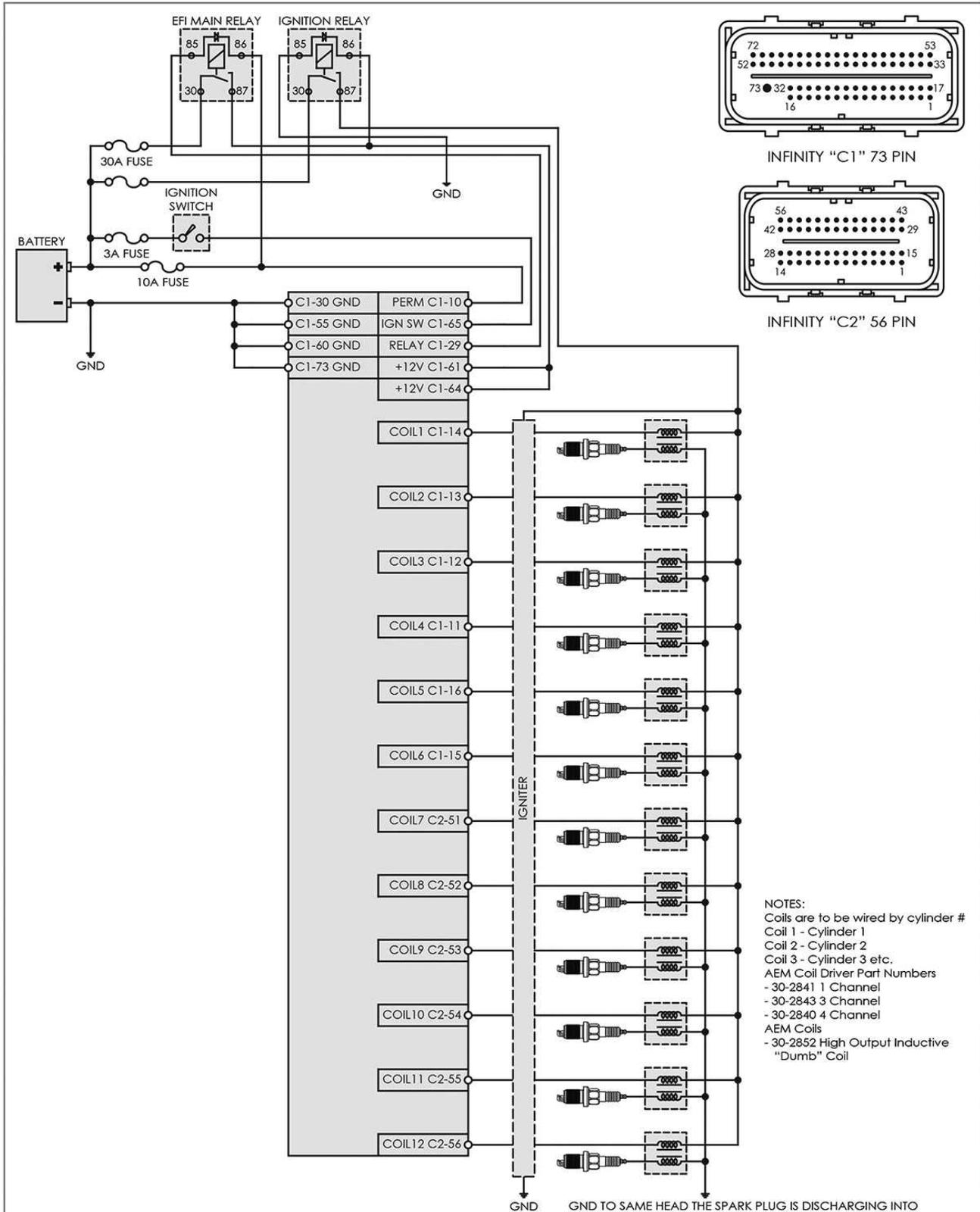
# Ignition System – COP 2 Wire "Dumb" Coils with Ignitor, Infinity-8/10/12



NOTES:  
 Coils are to be wired by cylinder #  
 Coil 1 - Cylinder 1  
 Coil 2 - Cylinder 2  
 Coil 3 - Cylinder 3 etc.  
 AEM Coil Driver Part Numbers  
 - 30-2841 1 Channel  
 - 30-2843 3 Channel  
 - 30-2840 4 Channel  
 AEM Coils  
 - 30-2854 Pencil Coil  
 - 30-2854-4PK Pencil Coil 4 Pack



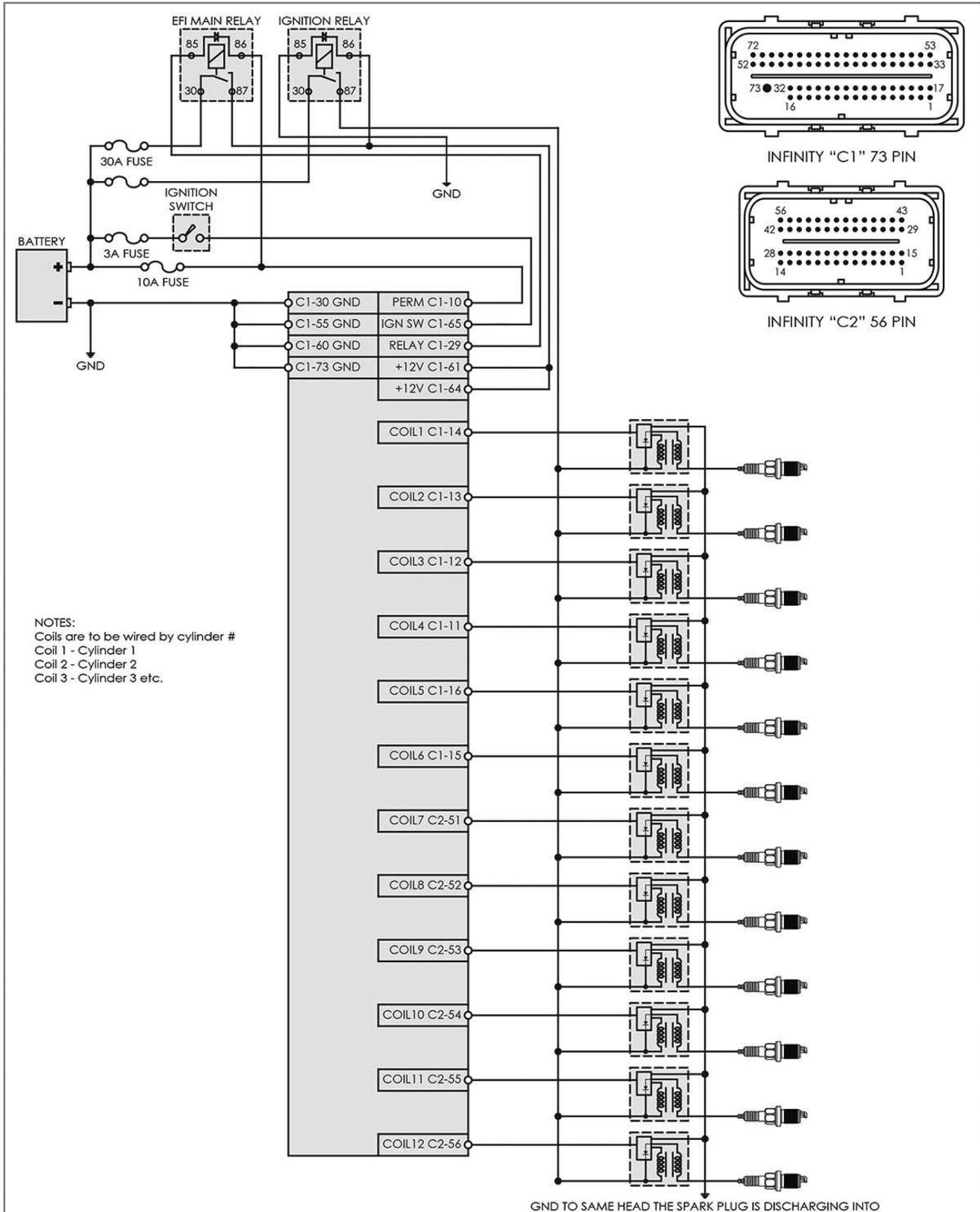
# Ignition System – COP 3 Wire "Dumb" Coils with Ignitor, Infinity-8/10/12



Drawing: Ignition System - COP 3-Wire Dumb Coils with Ignitor

ECU: Infinity-8/10/12      Date: 08/07/2014      Rev: A      Engineer: Nakano

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



Drawing: Ignition System - COP 3-Wire Smart

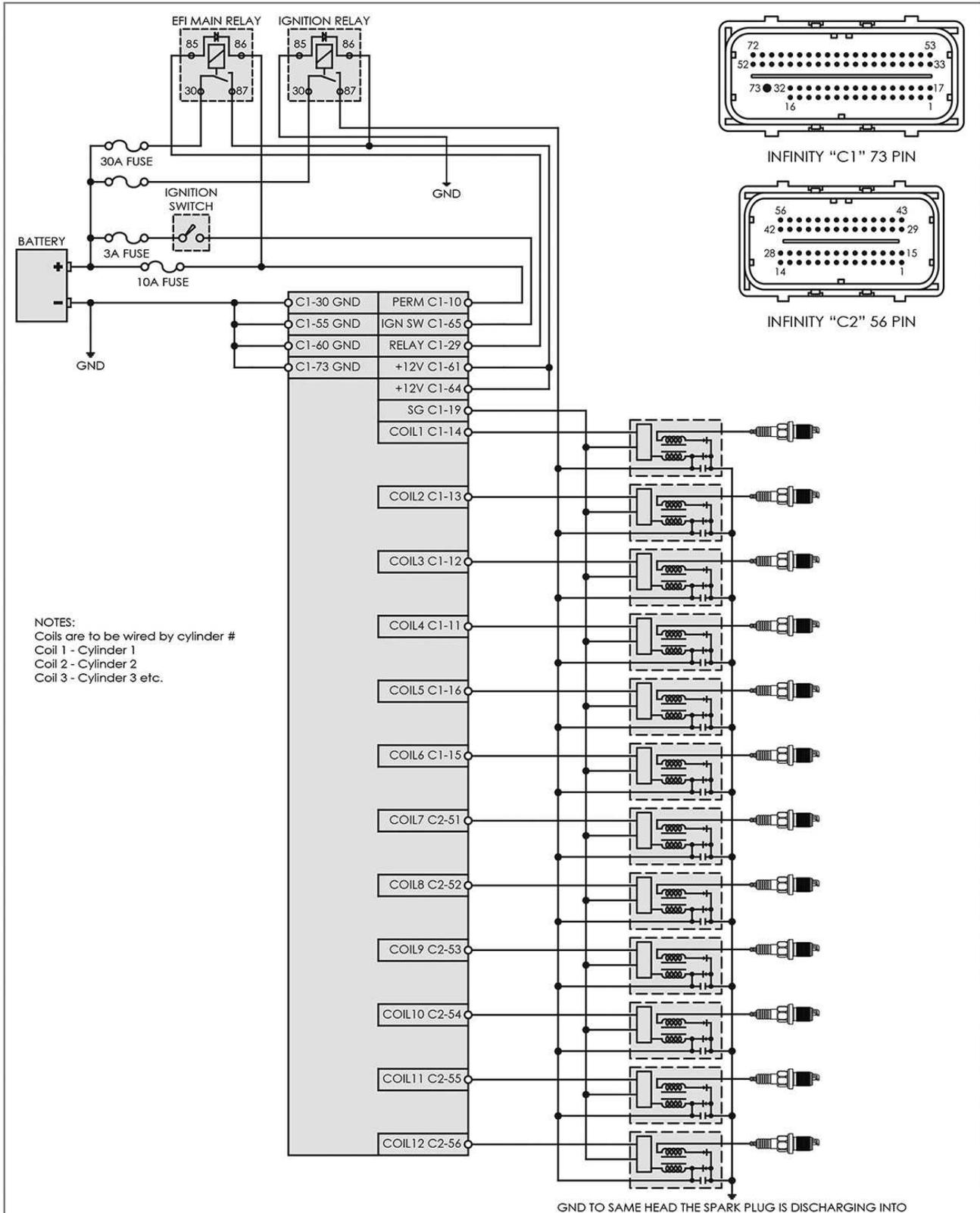
ECU: Infinity-8/10/12

Date: 08/06/2014

Rev: A

Engineer: Nakano

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



Drawing: Ignition System - COP 4-Wire Smart

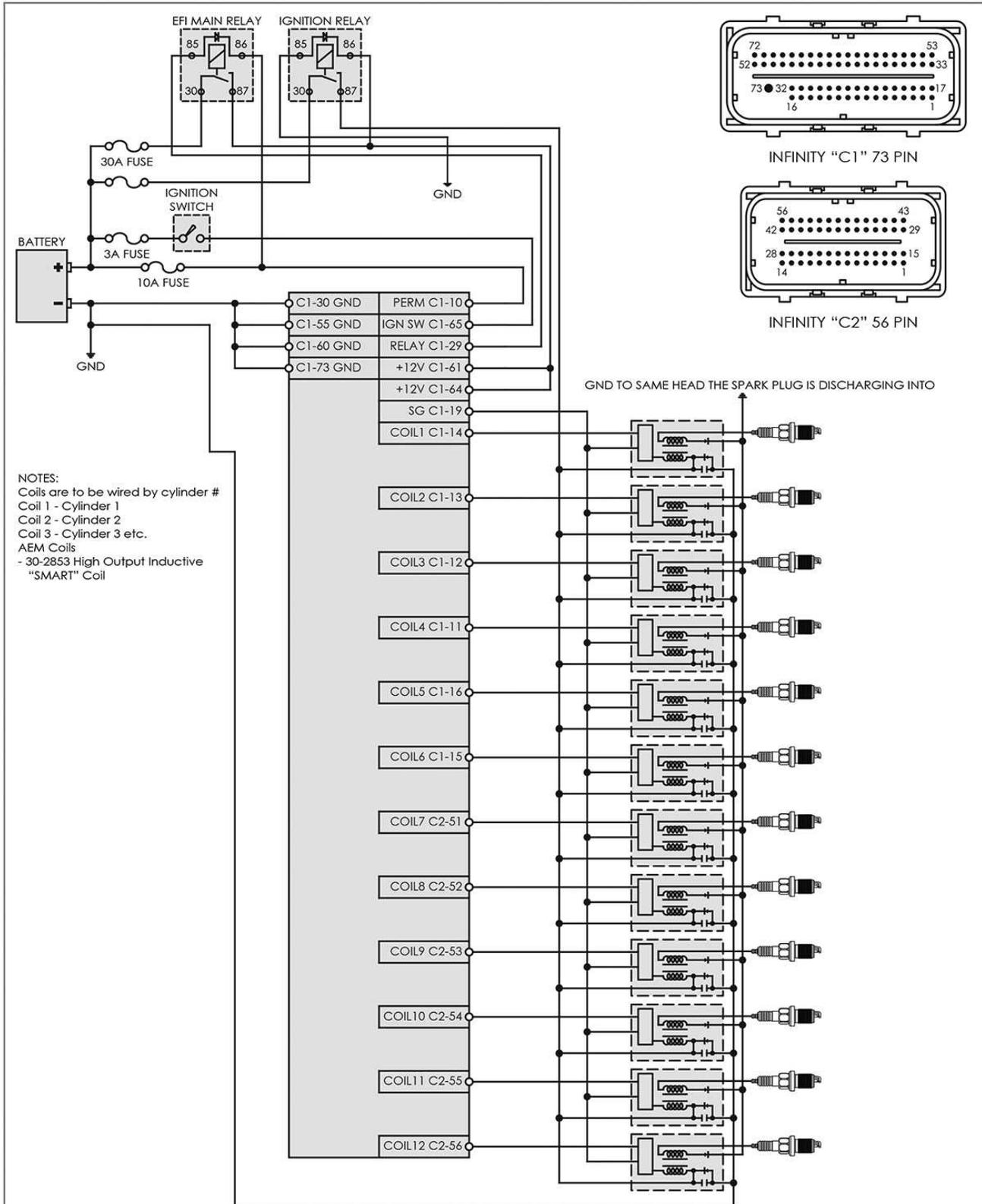
ECU: Infinity-8/10/12

Date: 08/07/2014

Rev: A

Engineer: Nakano

# Ignition System – COP 5 Wire "Smart" Coils, Infinity-8/10/12



Drawing: Ignition System - COP 5-Wire Smart

ECU: Infinity-8/10/12

Date: 10/02/2014

Rev: A

Engineer: Nakano

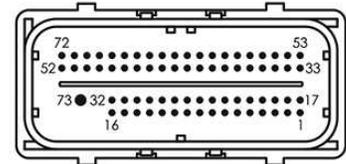
# GM LS3 DBW Wiring, Infinity-8/10/12

## ACCELERATOR PEDAL POSITION (APP) SENSOR

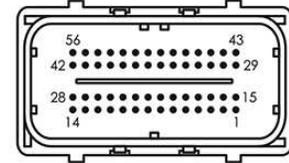
GM PIN	INFINITY PIN	WIRE COLOR	FUNCTION
A	C1-19	Purple	Sensor Ground
B	C2-14	Light Blue	Accelerator Pedal Position (APP) Sensor 2 Signal
C	C1-42	Tan	+5 Volt Reference
D	C1-20	Brown	Sensor Ground
E	C2-13	Dark Blue	Accelerator Pedal Position (APP) Sensor 1 Signal
F	C2-22	White/Black	+5 Volt Reference

## THROTTLE BODY

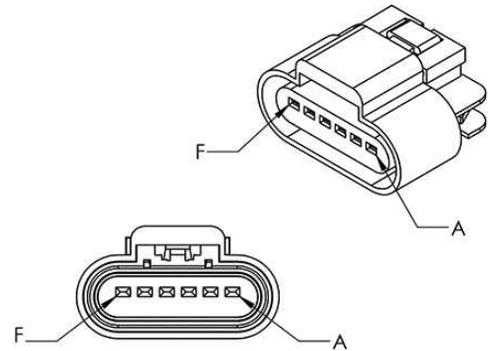
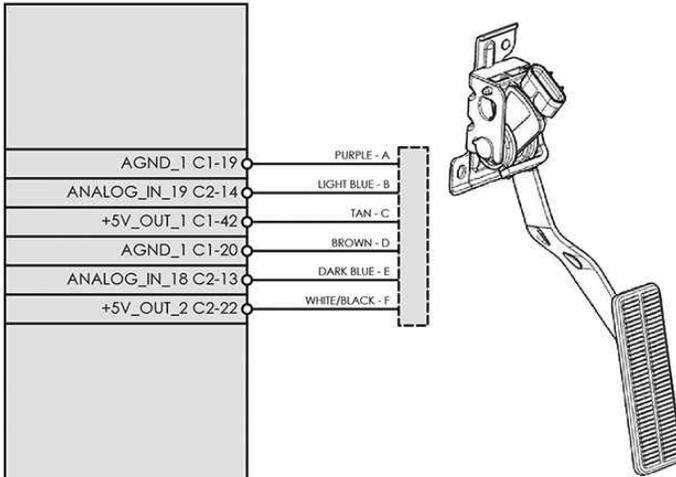
GM PIN	INFINITY PIN	WIRE COLOR	FUNCTION
A	C1-53	Brown	Throttle Acuator Control (TAC) Motor Control - 2
B	C1-54	Yellow	Throttle Acuator Control (TAC) Motor Control - 1
C	C2-30	Tan/White	Sensor Ground
D	C1-35	Dark Green	Throttle Position Sensor 1 Signal
E	C2-23	Light Blue/Black	+5 Volt Reference
F	C2-21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



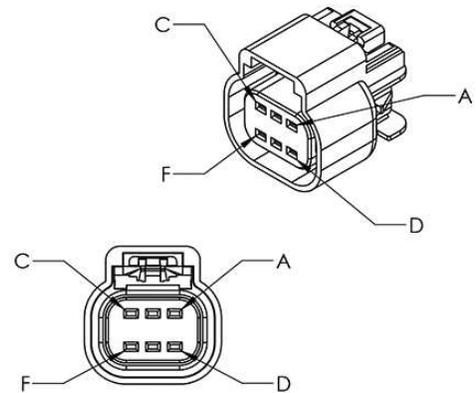
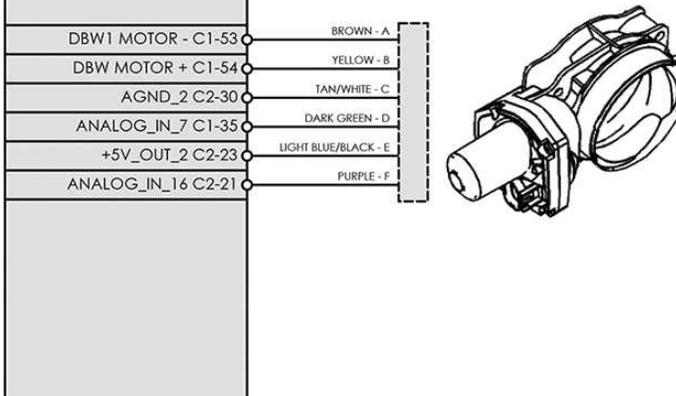
INFINITY "C1" 73 PIN



INFINITY "C2" 56 PIN



ACCELERATOR PEDAL POSITION (APP) SENSOR



THROTTLE BODY



Drawing: GM LS3 ACCELERATOR PEDAL & DBW THROTTLE BODY

ECU: Infinity-8/10/12

Date: 08/04/2014

Rev: A

Engineer: Nakano