e-manage (Blue) ECU Manager

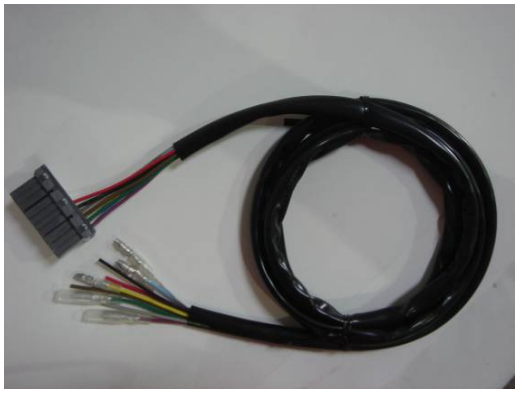
● ***e-manage Components***

◎ **e-manage Main Unit (15500500)**

Piggy-back Engine Management Unit.

◎ **Main Harness *(included with e-manage unit)**

Wiring Harness for basic control of the air flow meter and VTEC control.



◎ **Injector Harness (15900901)**

Plugs into the e-manage Main Harness to allow control of the ECU injector signal and the use of two sub injectors. (Must use Support Tool Software)

◎ **Ignition Harness (15900901)**

Enables control of the ECU ignition pulse. Plugs into connector 2 of e-manage unit. (Must use Support Tool Software)

◎ **Support Tool Software (15901001)**

Includes Software for tuning the e-manage unit and Serial to USB cable required to connect the unit to a laptop computer.

※ Please make sure firmware and software are updated to latest version (1.49).

◎ **Pressure Sensor with Pressure Sensor Harness (16401301 & 16401406)**

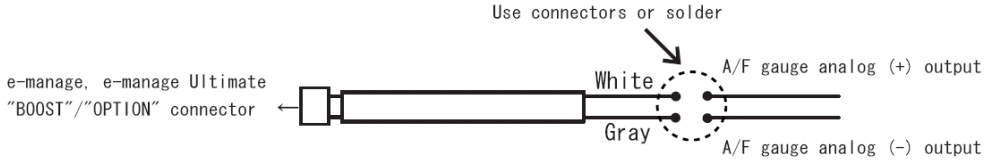
Used for monitoring manifold pressure with the e-manage system. This does not replace the factory sensor, but is used only for tuning the e-manage unit. Sensor is a 0-5 volt sensor and can read up to 3 bar.

◎ **Profec e-01 to e-manage pressure sensor harness(15900543)**

Used to allow the e-manage to monitor manifold pressure through the e-01 pressure sensor reading. Connects the e-01 Center Unit to the e-01 “Boost” port.

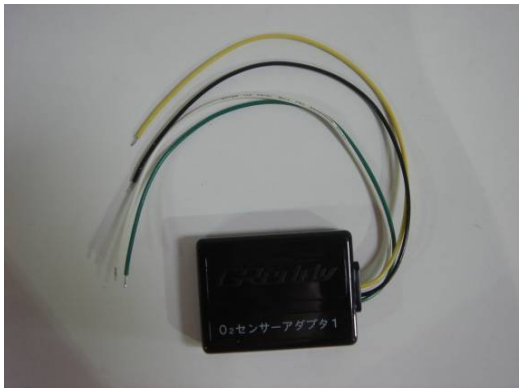
◎ **A/F Sensor Harness (15900912)**

Used to connect a wide band O2 sensor 0-5 volt analog signal to the e-manage “Option” port. Used for data logging air fuel ratio while tuning with Support Tool.



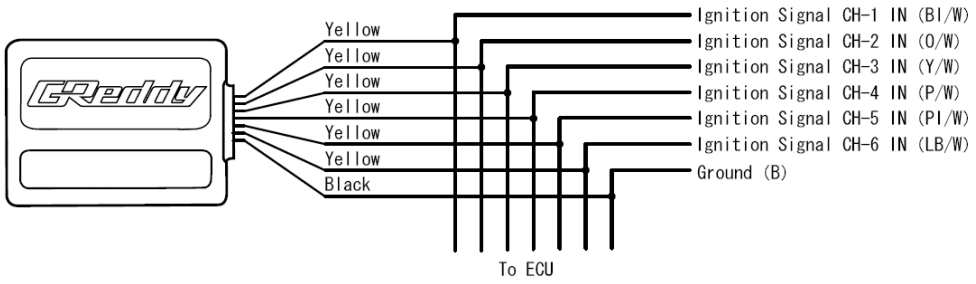
◎ **Adapters**

Depending on the application, some adapters will be required to be wired into the system. (O2 Sensor Adapter shown below)



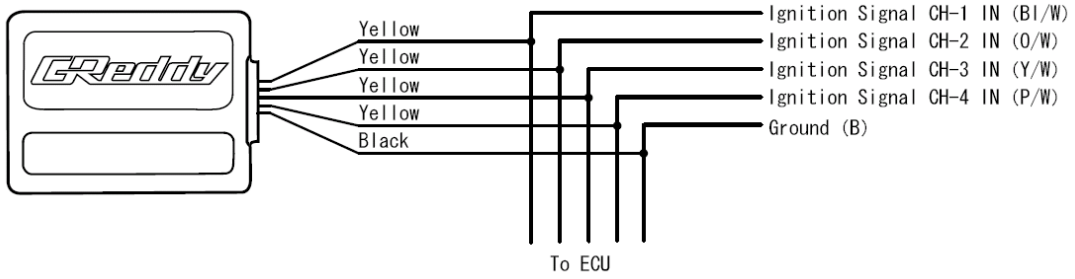
1. **Ignition Adapter 1 (15900906)**

   Used to prevent a check engine light when wiring the Ignition Harness on the Nissan NEO Straight Six (ER34, WGNC34)



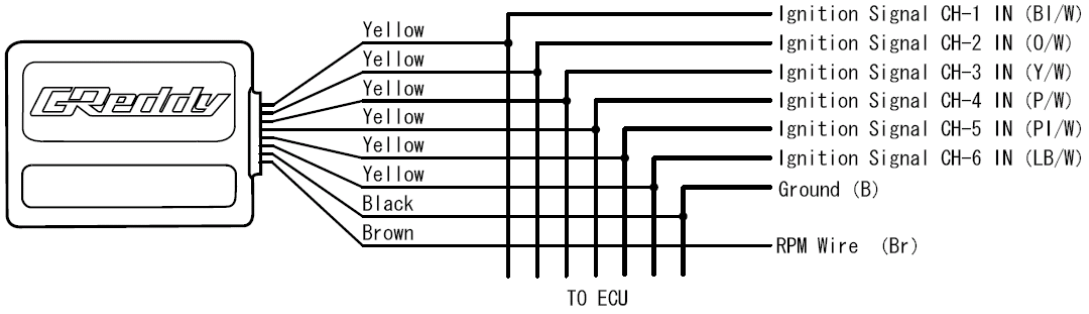
2. Ignition Adapter 2 (15900907)

Used to prevent a check engine light and fuel cut due to wiring the e-manage ignition harness. (Mitsubishi Lancer Evolution – CT9A).



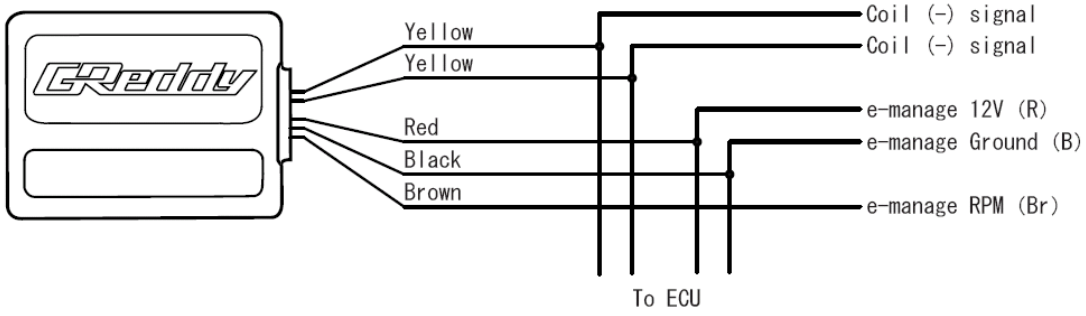
3. RPM Adapter 1 (15900904)

Used to create an RPM signal from ECU ignition pulse. Designed for Nissan vehicles with CAN communication that do not have an RPM output signal.



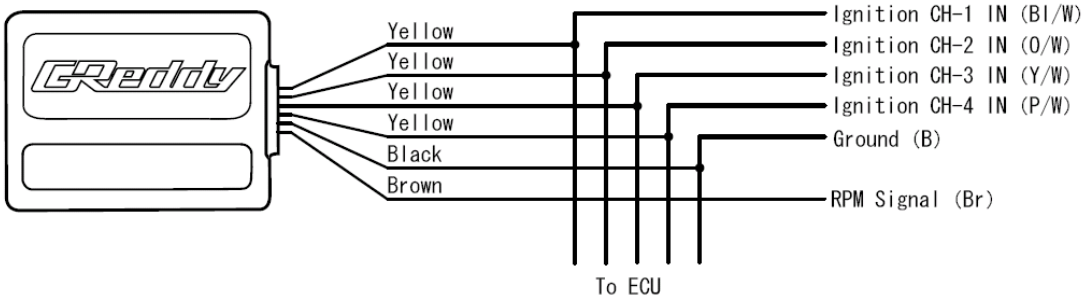
4. RPM Adapter 2 (15900905)

Used to create an RPM signal from the ignition coil (-) side from ECU's that do not have an RPM output signal. (Up to 2 channels)



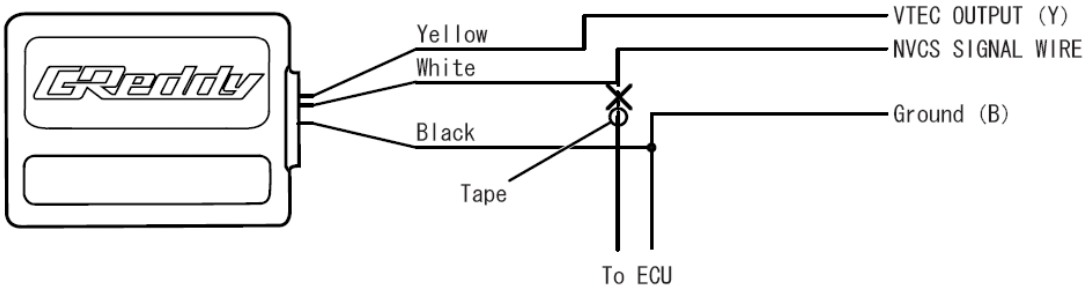
5. RPM Adapter 3 (15900909)

Used to create an RPM signal from the ECU ignition pulse. Designed for Mazda RX-8 ECU.



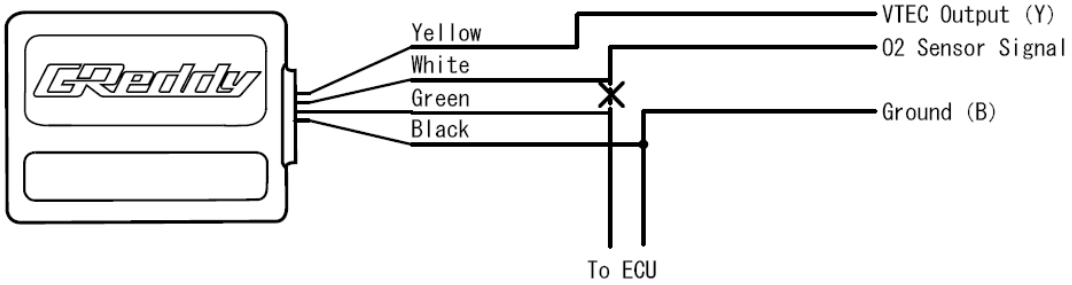
6. NVCS Adapter (15900910)

Used to control NVCS on Nissan vehicles.



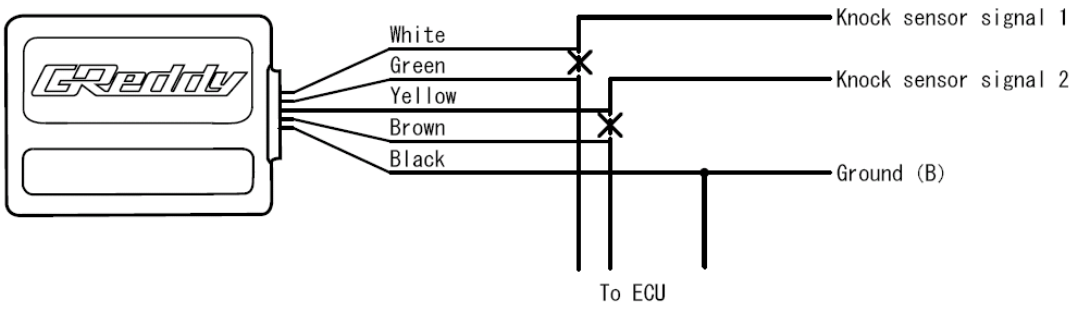
7. O2 Sensor Adapter (15900908)

Used to send a lean O2 signal to the ECU, when the ECU is operating in closed loop. Designed for vehicles that have a narrow band (0-1V) O2 sensor.



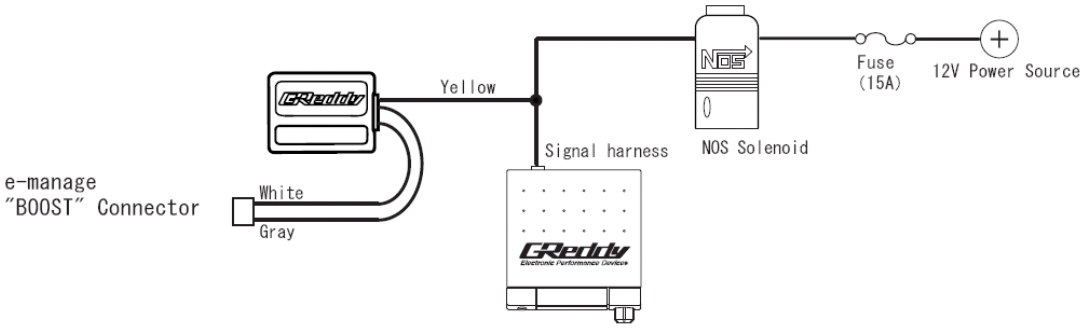
8. Knock Sensor Adapter (15900903)

Used for vehicles with very sensitive Knock Sensors. Designed to prevent Ignition Timing retard from ECU's that are too sensitive.



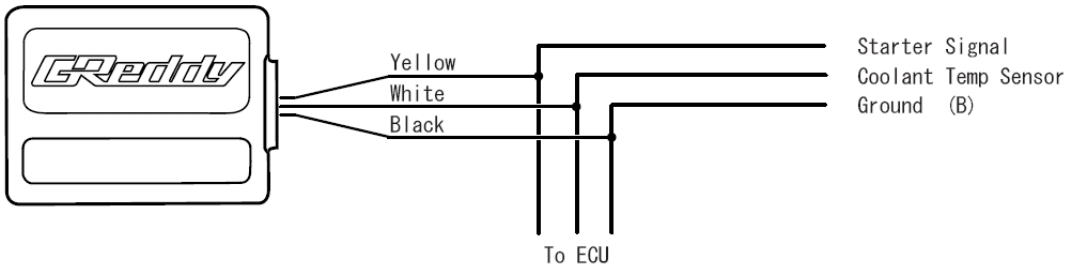
9. MSS Adapter (15900911)

Used to monitor the Multi Switching System activation signal and retard/advance ignition timing when activated.



10. Water Temp Signal Adapter (15900913)

Used to improve engine starting when using larger injectors.

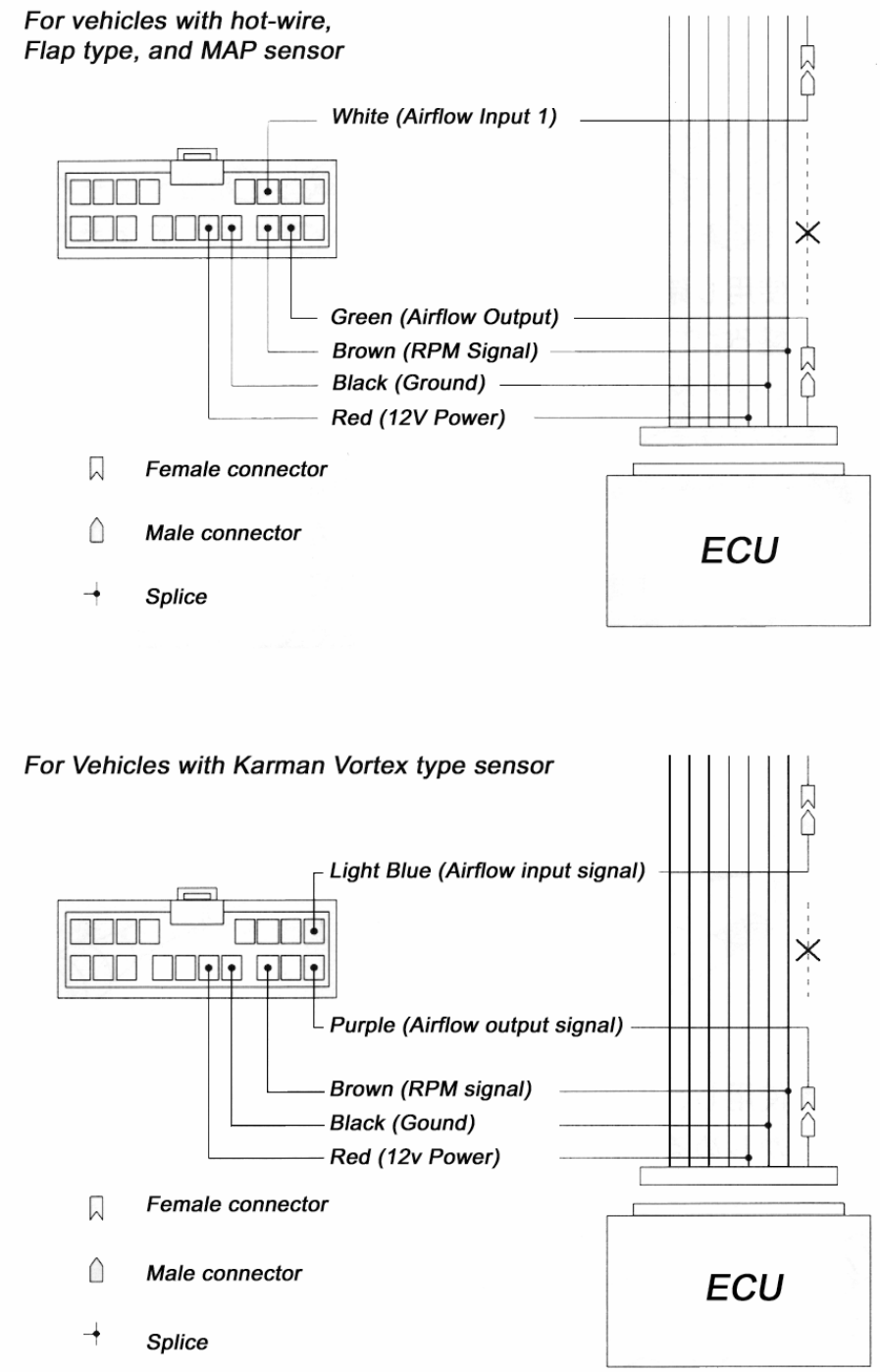


e-manage Wiring and Setup

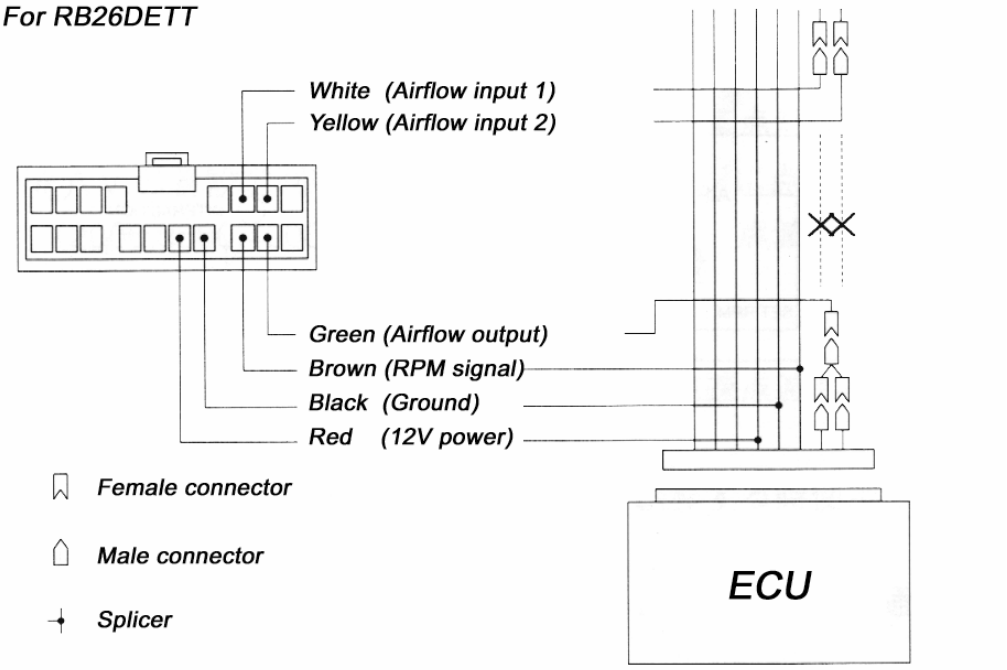
- ***Wiring Diagram***

1. Basic Harness

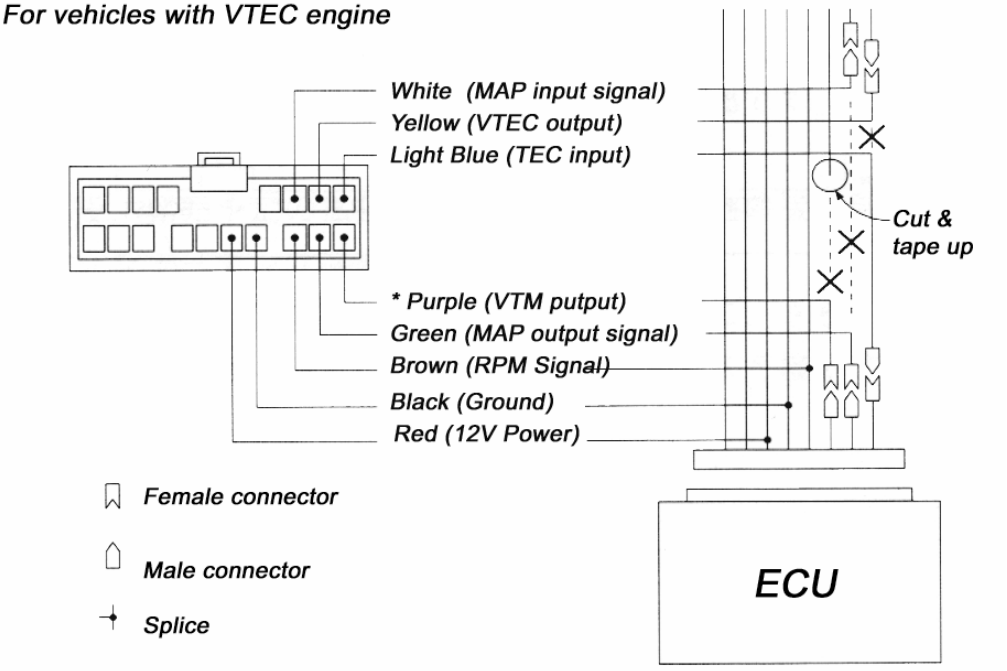
   Can be used to control AAV and VTEC Point with rotary dials on the front of the unit.



For RB26DETT



For vehicles with VTEC engine



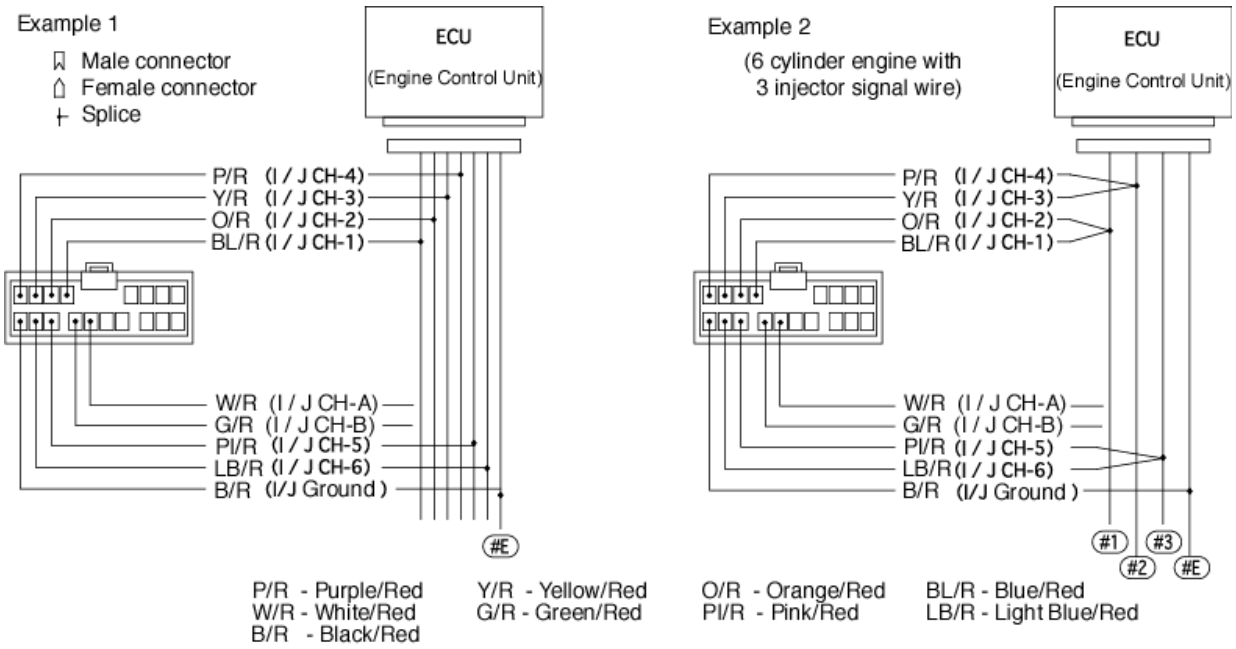
2. Optional Injector Harness

Used to splice into the factory injector wires to add injector pulse width. Also can be used to wire up to two sub injectors.

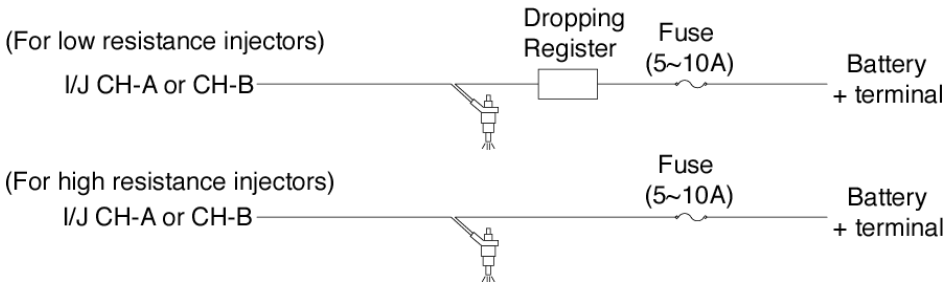
※ If injector ground is not connected properly the additional injection function will not operate properly.

※ Injector channels are connected in order of cylinder number.

Additional Injection Wiring



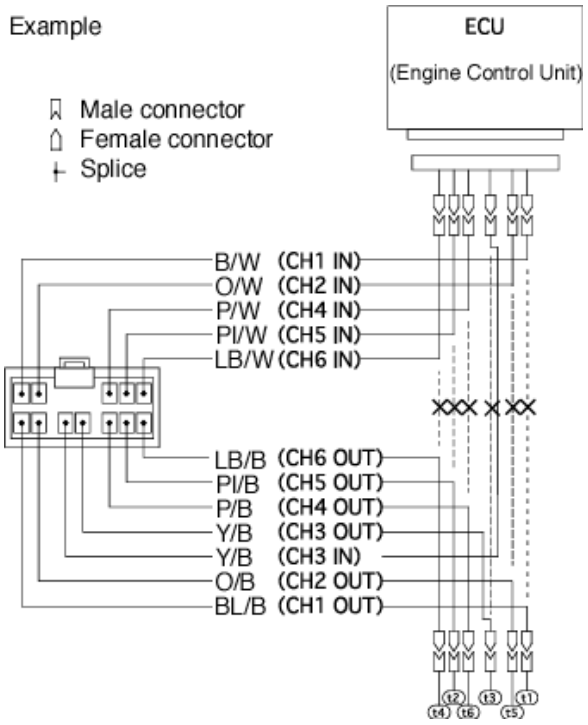
Sub-Injector Wiring



3. Ignition Harness

Used to adjust ignition timing by intercepting ECU ignition pulse.

- Connect ignition channels in order of engine firing order.



e-manage I/G Channel	CH-1	CH-2	CH-3	CH-4	CH-5	CH-6
3, 4, 6, 8 cylinder distributor	t					
Inline 4 cylinder group ignition	t1,4	t2,3				
Horizontally opposed 4 cylinder	t1,2	t3,4				
Inline 4 cylinder individual ignition	t1	t3	t4	t2		
Horizontally opposed 4 cylinder	t1	t3	t2	t4		
Inline 6 cylinder group ignition	t1,6	t5,2	t3,4			
V6 group ignition	t1,4	t2,5	t3,6			
Inline 6 cylinder individual ignition	t1	t5	t3	t6	t2	t4
V6 individual ignition	t1	t2	t3	t4	t5	t6
13B (FC3S, JC3SE)	tT	tL				
20B (JCESE)	tT			tL		
13B (FD3S)	tT1	tT2	tL			

● ***Initial Setup***

Initial setup consists of a few steps to allow the e-manage to be configured for your application.

Initial Setup will consist of:

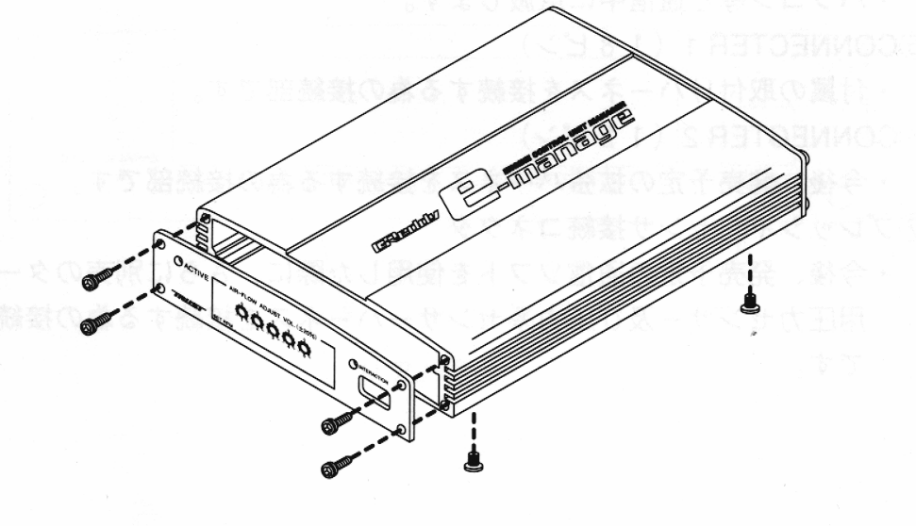
◎ Rotary Switch setting

Used to determine the vehicle application

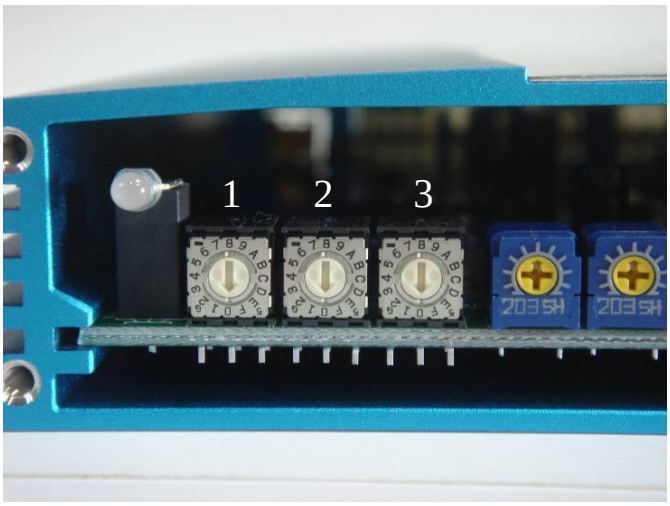
◎ Jumper Setting

Used to adjust the circuits on the e-manage hardware to match the proper application.

※ To prepare the unit for initial setup, you will need to remove the front cover and remove the hardware from the case.



1. Rotary Switch Setting



1. Set to determine the cylinder number and ignition system type.
2. Set to determine the air flow meter manufacturer.
3. Set to determine the air flow meter model.

※ Rotary Switch 1 Setting Information

The number of cylinders and ignition type will determine the setting for rotary switch 1.

Switch 1	# Cylinder	Ignition Type	
0	3	DISTRIBUTOR	-
1	3	INDIVIDUAL COIL	-
2	4	DISTRIBUTOR	-
3	4	GROUP FIRE	EXCEPT 4A-GZE
4	4	INDIVIDUAL COIL	-
5	6	DISTRIBUTOR	-
6	6	GROUP FIRE	EXCEPT 7M-GTE
7	6	INDIVIDUAL COIL	-
8	8	-	-
9	8	DISTRIBUTOR	-
A	2 ROTOR	-	FD3S
B	2 ROTOR	-	FC3S
C	3 ROTOR	-	JCESE
D	-	-	-
E	-	-	-
F	-	-	-

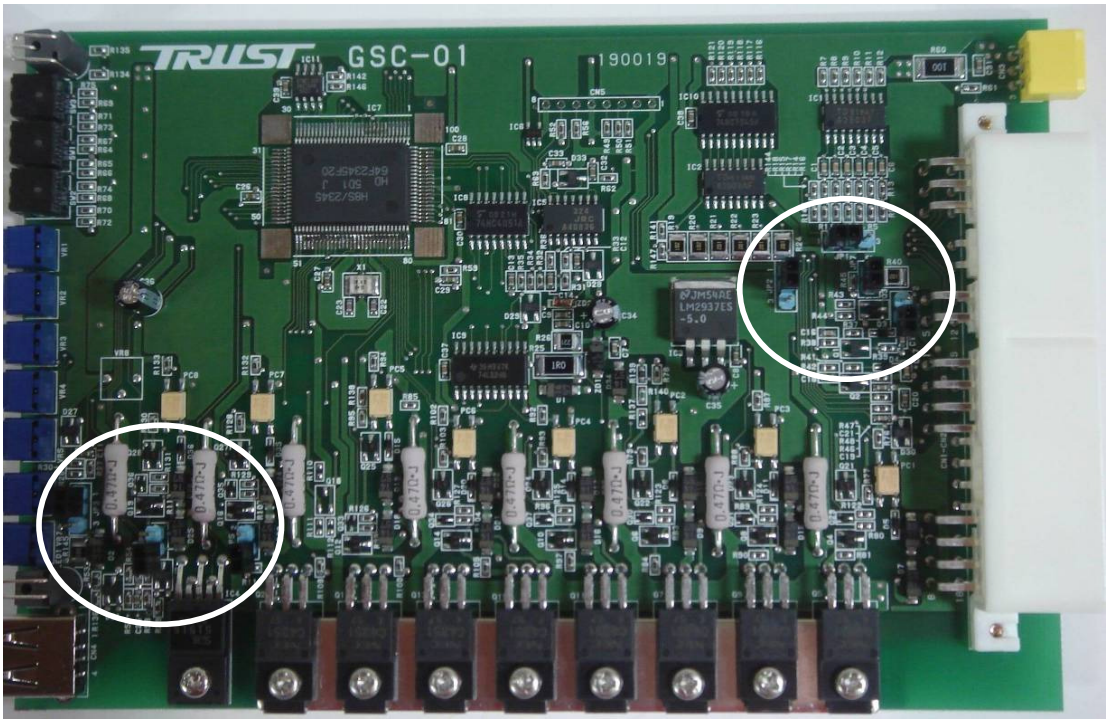
※ Rotary Switch 2 and 3 setting information.

The manufacturer and air flow meter type will determine rotary switch 2 and 3 settings.

Switch 2:3	0:0	0:1	0:2	0:3	0:4	0:5	0:6	0:7	0:8	0:9	0:A	0:B	0:C	0:D	0:E	0:F
Sensor Type	NS_HW-1	NS_HW-2	NS_HW-3	NS_HW-4	NS_HW-5	NS_HW-6	NS_HW-7	NS_HW-8	NS_HW-9	NS_HW-10	NS_HW-11					
Sensor Part#	22680-61U00	22680-30P00	22860-02U00	22680-16V00	22680-31U00	22680-05U00	22680-89F00	22680-52F00	22680-54C01	22680-58A10	22680-5J000					
Chassis Code	G50	Z32	ECR33	C33	C34	BNR32 TT	S14	PS13	PNW10	S13	WHP11					
	Y32		HCR32	A31	C35	BCRN33 TT	S14									
Engine Code	A:VH	A:VH	A:RB, VG	A:RB, VG	A:RB, VG	RB26DETT	SR20DET	SR20DET	SR20DET	CA18DET	SR20VE					
	B:RB, VG	B:RB, VG	B:SR, CA	B:SR, CA	B:SR, CA			SR20DET								
	C:SR, CA	C:SR, CA														
Switch 2:3	2:0	2:1	2:2	2:3	2:4	2:5	2:6	2:7	2:8	2:9	2:A	2:B	2:C	2:D	2:E	2:F
Sensor Type	TW_HW-1	TW_HW-2	TW_HW-3	TW_HW-4	TW_HW-5	TW_HW-6										
Sensor Part#	22204-21010	22204-22010	22204-22010	22250-50060	22204-46010	22204-46010										
Chassis Code	SXE10	SCP10	NCP15	JZX100 T	JZS161	JZX110										
	MCR30	SCP11	NCP31													
Engine Code	A:3S-GTE (VVTi)	1SZ-FE (VVTi)	2NZ-FE (VVTi)	1JZ-GTE (VVTi)	2JZ-GTE (VVTi)	1JZ-GTE (VVTi)										
	B:1MZ-FE		1NZ-FE (VVTi)													
Switch 2:3	4:0	4:1	4:2	4:3	4:4	4:5	4:6	4:7	4:8	4:9	4:A	4:B	4:C	4:D	4:E	4:F
Sensor Type	TY_PR-1	TY_PR-2	TY_PR-3					TY_FL-1	TY_FL-2	TY_FL-3	TY_FL-4					
Sensor Part#	A:89420-10110	89420-17050	89420-17040					222550-16110	22250-74210	22250-70260	22250-16050					
	B:89421-12110	89420-22110														
Chassis Code	A:EP91	A:ST205, SW20	A:SW20, AE111					AE101	SW20	GZ20	AW11					
	B:JZS147, JZA80		B:GXE10							GA70						
Engine Code	A:4E-FTE	A:3S-GTE	A:4S-GE, 4A-GE					4A-GE	A:3S-GTE	1G-GTE	4A-GZE					
	B:1JZ, 2JZ	B:1JZ, 2JZ	B:1G, 1JZ, 2JZ						AB:1G							
Switch 2:3	6:0	6:1	6:2	6:3	6:4	6:5	6:6	6:7	6:8	6:9	6:A	6:B	6:C	6:D	6:E	6:F
Sensor Type	SB_HW-1	SB_HW-2	SB_HW-3	SB_HW-4												
Sensor Part#	22680-AA200	22680-AA160	22680-AA271	22680-AA301												
Chassis Code	BD5/BG5	GC8-V1, V2	GC8-V3, V4	GC8-V5, SF5												
		BF5	BD5/BG5	GDA, GDFC												
Engine Code	EJ20	EJ20	EJ20	EJ20												
				EJ25												
Switch 2:3	8:0	8:1	8:2	8:3	8:4	8:5	8:6	8:7	8:8	8:9	8:A	8:B	8:C	8:D	8:E	8:F
Sensor Type				MT_KR-1	MT_KR-2						HN_PR-1	HN_PR-2	HN_PR-3	HN_PR-4		
Sensor Part#				MD183609	MD334005											
Chassis Code				CD9A	EC5W						EK4, EG6	RF1	NA1, RA5	KA9		
											BB6, CF6	JA4	DC5, EP3			
Engine Code											H22A, F23A, F20B	A:B20B, D13B	A:C30A, J30A			
											B16B, B16A, B18C	B:E07A	B:20C, K20A2/3			
Switch 2:3	A:0	A:1	A:2	A:3	A:4	A:5	A:6	A:7	A:8	A:9	A:A	A:B	A:C	A:D	A:E	A:F
Sensor Type	MZ_HW-1	MZ_HW-2					MZ_PR-1			MZ_FL-1	MZ_FL-1	MZ_FL-1	MZ_FL-1	MZ_FL-1		
Sensor Part#							N3A1-18-211			N318-13-210	N370-13-211	N390-13-210	66S7-13-210A	NF01-13-210		
Chassis Code	NB6C	BJ/FW					FD3S			FC3S	FC3S	JC3SE	NA6CE	JCESSE		
	NBBC															
Engine Code	B6-ZE	FS					13B-REW			13B	13B	13B-REW	B6-ZE	20B-REW		
	BB-ZE															
Switch 2:3	C:0	C:1	C:2	C:3	C:4	C:5	C:6	C:7	C:8	C:9	C:A	C:B	C:C	C:D	C:E	C:F
Sensor Type	SD_PR-1	SD_PR-2	SD_PR-3													
Sensor Part#	185590-73G00	89421-97201	89421-87204													
Chassis Code	EA21R	L90ZS	L50ZS													
	HA21S															
Engine Code	K6A	JB-DET	JB-JL													

2. Jumper Setting Information

There are 7 Jumpers used for the e-manage system. Setting these jumpers is crucial for proper operation.



JP1	Ignition Input	1-2 Pull Down	At ignition (key) "ON"	0V
			When it sends ignition signal	2.5~5V
		2-3 Pull Up	At ignition (key) "ON"	12V
			When it sends ignition signal	0V
	Most Hondas are Pull Up Type ignition (only Distributor Type)			
JP2	Ignition Output	1-2	5V IG Output system	
		2-3	12V IG Output system	
	Most Hondas are 12V output system			
JP3	Air Flow Meter	1-2	GT-R RB26DETT Airflow type	
		2-3	VTEC output	
JP4	Pulse Input	OPEN	Karman Input	
		1-2	VTEC input	
JP5	Injector CH-A	1-2	Sub Injector "A" feature on	
		OPEN	Sub Injector feature off (for 8 cylinder)	
JP6	Injector CH-B	1-2	Sub Injector "B" feature on	
		OPEN	Sub Injector feature off (for 8 cylinder)	
JP7	Pulse Output	1-2	Karman type airflow meter output signal	
		OPEN	VTM signal output for VTEC	

● ***e-manage Capabilities***

◎ **Basic Harness without Support Tool Software.**

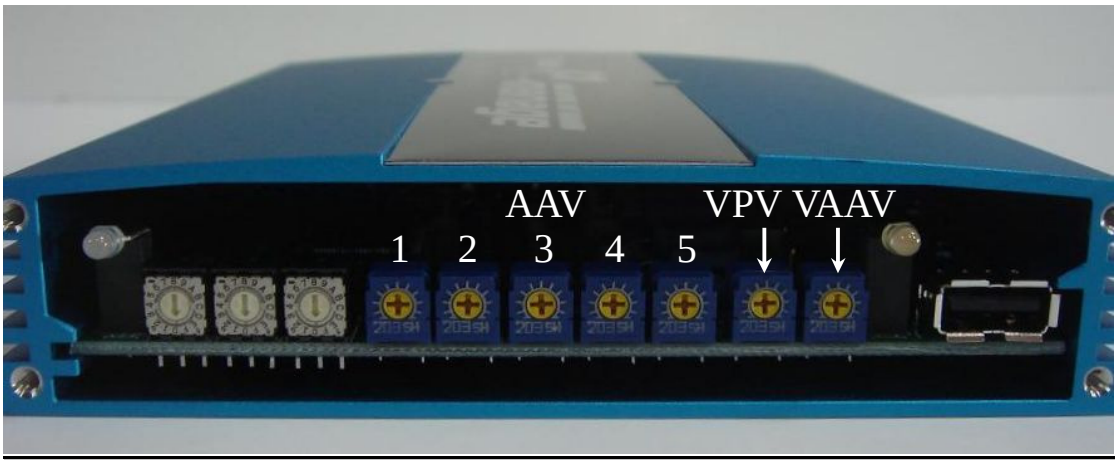
1. 5 AAV (airflow adjustment volume) points (2000RPM, 3000RPM, 4000RPM, 5000RPM, 6000,RPM) and can be adjusted by +/- 20% of air flow meter voltage.
2. Adjust VTEC point with rotary dial
3. VAAV (VTEC Airflow Adjustment Volume)

◎ **With Support Tool Software**

1. Make adjustments using 8 different tuning Maps.
   - Airflow Adjustment Map(16X16) – adjust air flow meter voltage or frequency
   - Boost Limiter Cut Map(16X2) – remove factory boost limiter
   - Anti Engine Stall Map(8X2) – prevent engine stall when decelerating
   - VTEC Adjustment Map(4X4) – adjust VTEC point or NVCS(adapter required)
   - Additional Injection Map(16X16) – extend injector pulse width to richen fuel mixture
   - Sub Injector Map(16X16) – control up to 2 sub injectors simultaneously
   - Ignition Adjustment Map(16X16) – adjust ignition timing
   - Acceleration Adjustment Map(8X8) – add fuel depending on throttle acceleration
2. Enables you to upgrade injector size (generally up to 50% larger injector than stock).
3. Upgrade air flow meter to larger size (only on select vehicles)
4. Monitor Manifold Pressure using GReddy Pressure Sensor.
5. Monitor the Multi Switching System Switch to retard/advance IG timing when active.
6. Monitor air fuel ratios using a wide band (0-5V) O2 sensor.
7. Lock unit with a password.

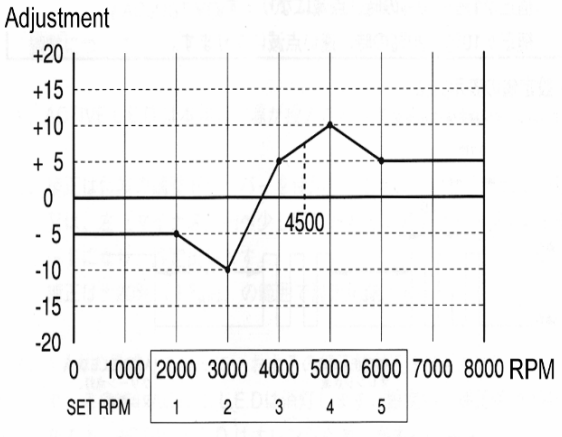
Basic Operation without Support Tool Software

Without the Support tool software, you can only make adjustments using the rotary dials on the front of the unit. These dials do not need to be adjusted if using the Support Tool Software. The same adjustments can be made using Maps in the Support Tool Software.



1. AAV (Airflow Adjustment Volume) Setting
   Used to adjust air flow meter signal using 5 rotary dials on the front of the unit. The rotary dials make adjustments at set increments of 1000 RPMs, with Dial 1 set at 2000 RPM and dial 5 set at 6000 RPM. Each dial can adjust air flow volume by +/- 20%. Turning the dial clockwise will increase the air flow meter signal (richen) and turning the dial counter-clockwise will decrease the air flow meter signal (lean out).

SET RPM	1	2	3	4	5
	2000rpm	3000rpm	4000rpm	5000rpm	6000rpm
Adjustment	-5%	-10%	+5%	+10%	+5%

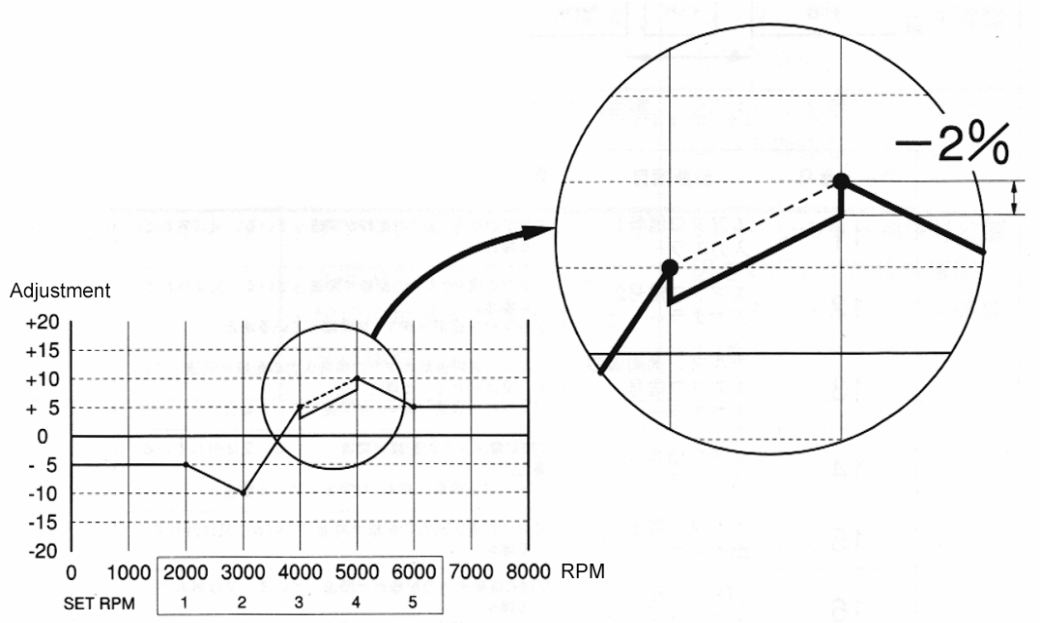


2. VPV (VTEC Point Volume) Setting

   This rotary dial is used to adjust the VTEC change over point. The VTEC point can be adjusted up to +/- 1000 RPM in 100RPM increments.

3. VAAV (VTEC Airflow Adjustment Volume) Setting

   This rotary dial is used to adjust air flow meter voltage only when the VPV Setting is active. When VTEC is activated at a different time from the factory setting, an increase in air flow volume will cause the need to make fuel adjustments. This setting will allow you to make the air flow meter adjustment only when the VPV is activated to compensate for the increase of air flow.



Basic Operation with Support Tool Software

● ***Connecting the Unit to a Laptop Computer***

◎ Requires the use of the Support Tool Software.

The Support Tool Software includes the installation CD and a serial-USB cable.

※If your laptop does not come with a 9-pin serial port, it is possible to use a PDA adapter to allow communication through your USB port. Make sure your PDA Adapter COM port settings match the COM port settings in the Software. (Device Manager Setting)

Support Tool Serial Cable

PDA Adapter

※ The Support Tool will not communicate with the e-manage unit if only a standard USB cable is used. The serial cable must be used in order to communicate.

※The latest versions of the Support Tool Software and e-manage firmware is 1.49. If your versions are older than this, please download the update from our website.

● ***Air Flow Adjustment (16X16 MAP)***

The ECU determines how much fuel to deliver and where to set the ignition timing by monitoring the air flow meter or pressure. The e-manage/e-manage Ultimate will intercept the air flow meter signal and output a different signal to the ECU to cause the ECU to lean or richen the fuel mixture and advance/retard ignition timing.

※ Some ECU types may not react properly with the air flow adjustment.

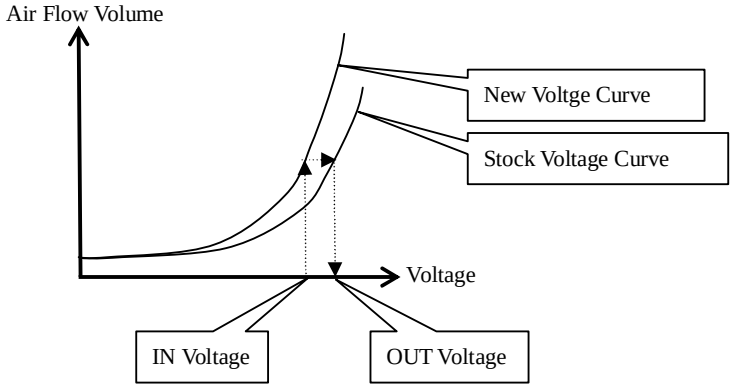
※ Generally, adding numbers from the air flow adjustment will retard ignition timing.

※ Generally, subtracting numbers from the air flow adjustment will advance ignition timing.

※ For turbo cars with N/A ECUs and cars with factory boost cuts, the air flow adjustment will not be able to adjust above the boost cut value/CEL value.

● ***Air Flow Meter Change Method***

Since different air flow meters will measure air flow volume at different voltage rates, the vehicle will not operate properly just by changing the air flow meter. With this function, the e-manage/e-manage Ultimate unit has measured values for air flow volume versus air flow voltage from both air flow meters. With the same air flow volume, the two units will have different voltage readings. The e-manage/e-manage Ultimate unit will calculate the air flow volume from the new sensor and convert it back to what the stock air flow meter would have read if it was measuring the exact same air flow volume.



※ Since the ECU has a limit as to how much voltage will be measured from the air flow meter, the Injector and Ignition maps will need to be adjusted when the air flow meter is maxed.

● ***Injector Change Scale***

When upgrading to larger injectors, the stock injector duration will be too large for the upgraded injectors. To trim the ECU injector pulse, the e-manage will trim the air flow meter voltage according the size difference of the stock and upgraded injector.

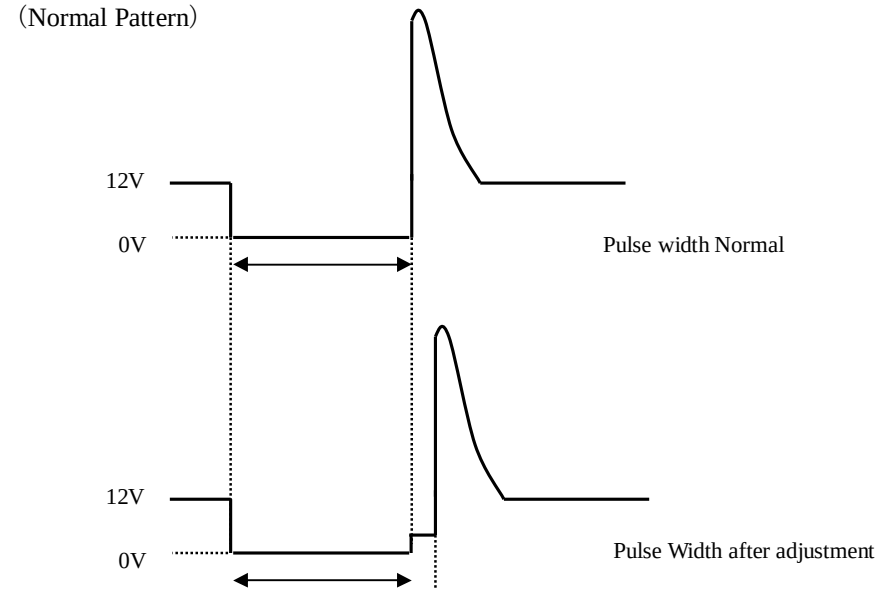
※ Since the injector change scale may affect the air flow meter voltage substantially, it is possible the ignition timing may be advanced. It may be necessary to adjust timing with the IG maps.

※ Depending on the ECU, the injector scale may not operate properly.

※ If the upgraded injector is too large, it may cause problems and the engine may not operate properly.

● ***Additional Injection MAP (16X16)***

The e-manage/e-manage Ultimate units will monitor the injectors closing point. To add fuel, the unit will extend the injector pulse width by keeping the injector open longer (than factory setting). The e-manage can only add fuel with the Additional Injection Map. .



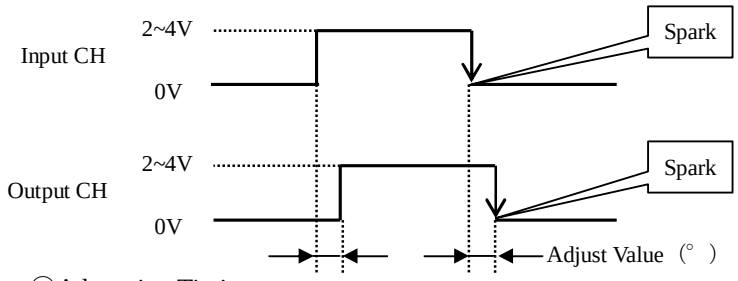
● ***Sub Injector MAP (16X16)***

This map is used to control up to two sub injectors simultaneously. The sub injector will open at every other ignition pulse signal. If it is a single sub injector on a four cylinder, it will spray fuel two times every cycle. If two sub injectors are on a four cylinder motor, each injector will spray once every cycle

● ***Ignition Adjustment MAP (16X16)***

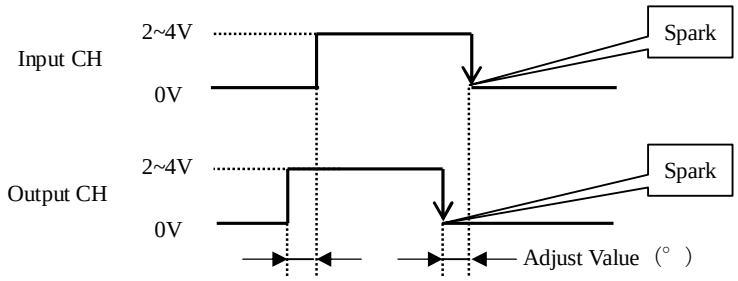
◎Retarding Timing

The e-manage unit can delay the ignition pulse from the ECU to retard the ignition timing.



◎Advancing Timing

The e-manage/e-manage Ultimate unit can advance ignition timing by creating an ignition pulse signal before the ECU signal is received. The moment the ignition pulse is created by the e-manage will be determined by map value and predicted time of ECU Ignition pulse input.



※ Advancing ignition timing may not operate properly on some vehicles.

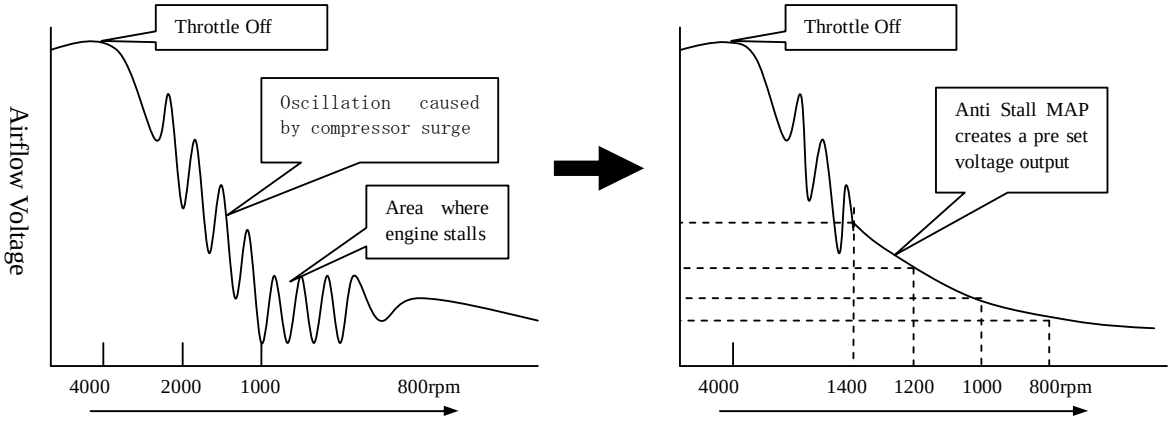
● ***Auxiliary (VTEC/NVCS) Output MAP (4X4)***

This Map is used to adjust the VTEC or NVCS activation points. Make adjustments by changing the RPM and load values at which you would like the solenoids to be activated and de-activated. For NVCS, the NVCS Adapter is required because of the difference in activation signals. Airflow adjustment values can be set as well to change the airflow signal when the auxiliary output signal is different from the Input signal (VTEC only). Since NVCS has no input channel, the airflow adjustment will be activated the whole time the solenoid is active. This Map can be used as an auxiliary switch well. The yellow wire can be used as a 12V switch for relays or adapters.

● ***Anti-Stall Setting MAP (8X2)***

This MAP is used for vehicles that have engine stall problems due to turbo compressor surge. When the throttle is let off and compressed air is pushed back out through the air flor meter, it will causeh heavy air flow meter signal oscillation. Since the air flow meter signal is not accurate, the ECU will not be able to deliver the proper amount of fuel, which will then cause the engine to stall.

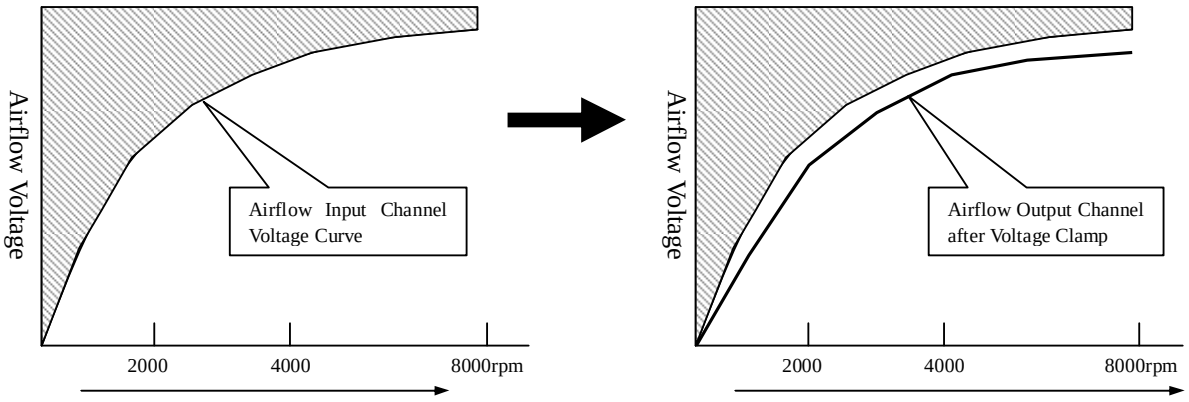
This MAP can be activated by Throttle Position (When TPS % is lower than specificied). Once activated, the e-manage will output a pre-programmed airflow meter signal.



● ***Boost Limiter Cut Setting (16X2)***

This Map is used to clamp the Airflow Output Channel at the desired voltage or frequency. Most vehicles are equipped with boost limiter or throw a CEL when air flow volume reaches a certain point, so it is necessary to prevent the ECU from seeing that amount in order to increase boost or horsepower. Maximum Output Channel Voltage can be set at 16 RPM points.

※Vehicles that have both airflow meter and pressure sensor will most likely monitor the pressure sensor to activate the factory boost limiter (Subaru and Mazda).



● ***Acceleration Adjustment Map (16X2)***

This Map is used to increase injector pulse width depending on the throttle acceleration. The stock ECU may not compensate for quick changes in throttle position and may cause the motor to run lean under heavy shifting or quick throttle movements. This Map will enable you to add fuel under these conditions, for a limited amount of time. The Gain setting will control how long the acceleration adjustment will be effective. Whatever number is set for the Gain setting will determine the increments in which the additional fuel will decrease per injector pulse.

For instance, if the gain is set at 1 and the acceleration map value is 40, the e-manage will add 40% injector pulse width and decrease it by 1% every time an injector fires. It will continue decreasing by 1% until it reaches 0, which will take 40 injector pulses. If the gain is set at 0.5 percent, it will take 80 pulses for it to reach 0.

※ When this Map is active, it will add the map value to the injector adjustment map value to create a total additional injection percentage value until the acceleration map value decreases back to 0 percent.