Syvecs LTD

V1.2

GT86 / BRZ

This document is intended for use by a technical audience and describes a number of procedures that are potentially hazardous. Installations should be carried out by competent persons only.

Syvecs and the author accept no liability for any damage caused by the incorrect installation or configuration of the equipment.

Please Note that due to frequent firmware changes certain windows might not be the same as the manual illustrates. If so please contact the Syvecs Tech Team for Assistance.

Support@Syvecs.com

Contents

The kit comes with the following:

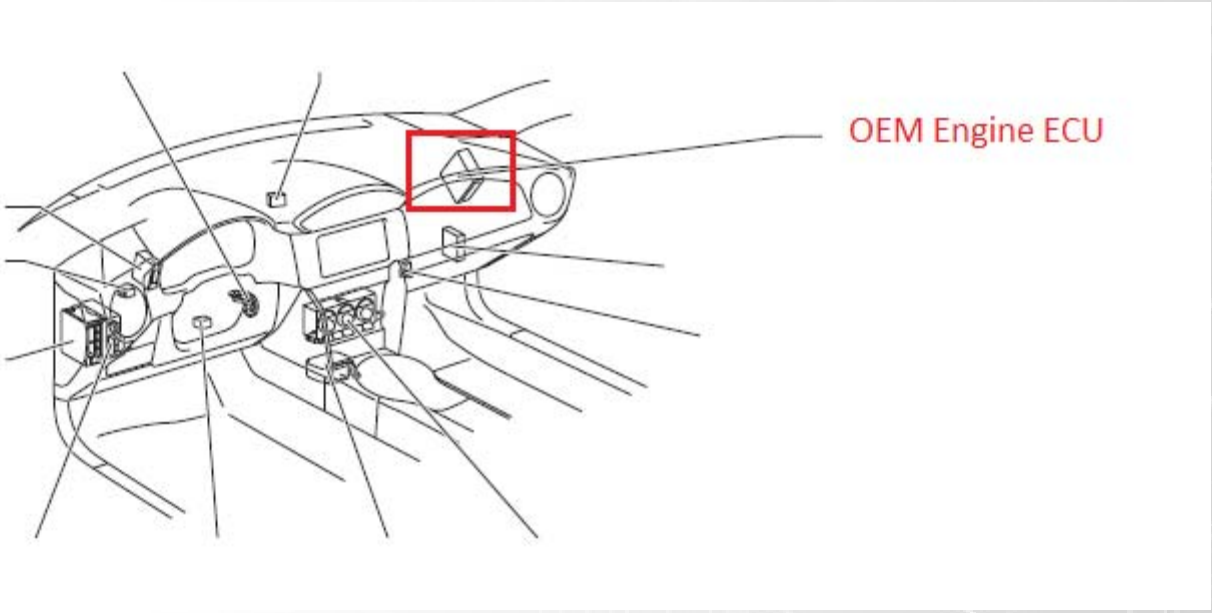
1 x Syvecs S7Plus

1 x GT86/BRZ/FRS Loom Adaptor

Installation

1.) Remove the Negative Terminal from the battery on the Vehicle

2.) Unplug the OEM Engine control module found underneath the Glove box. There will be 4 connectors



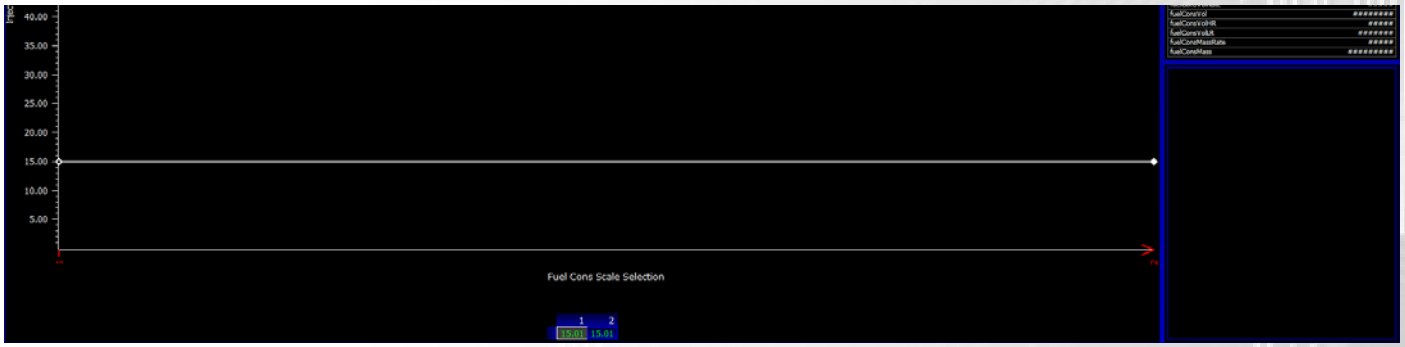
3.) Plug the 4 Connectors into the Syvecs Plug in Harness

GT86/BRZ Software Options

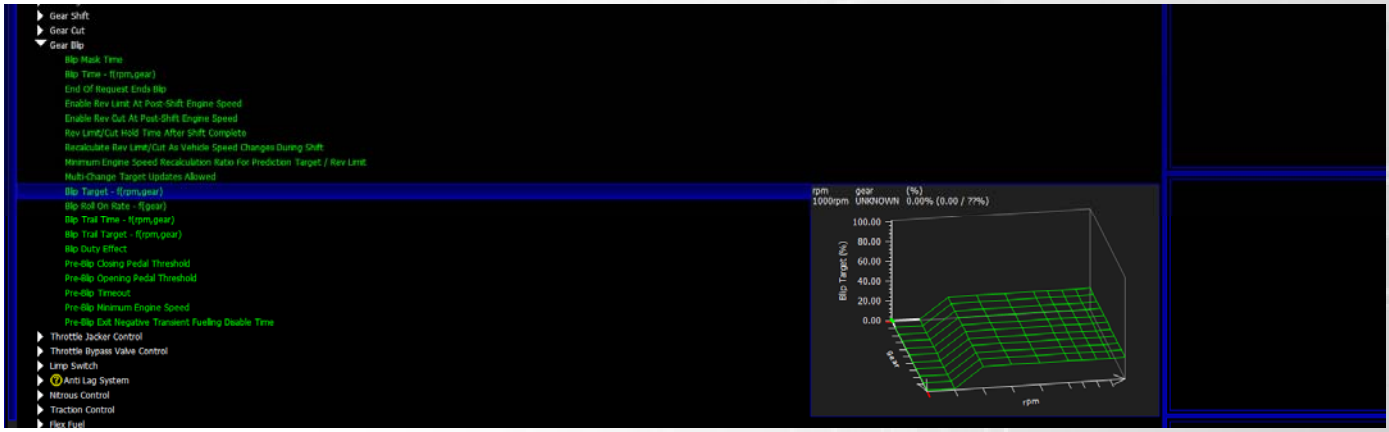
MPG Scaling on Dash -Injector Size is set in Fuel Consumption – Injector Consumption Scaling for MPG on the Dash

Injector Size / 60 = ml/s value

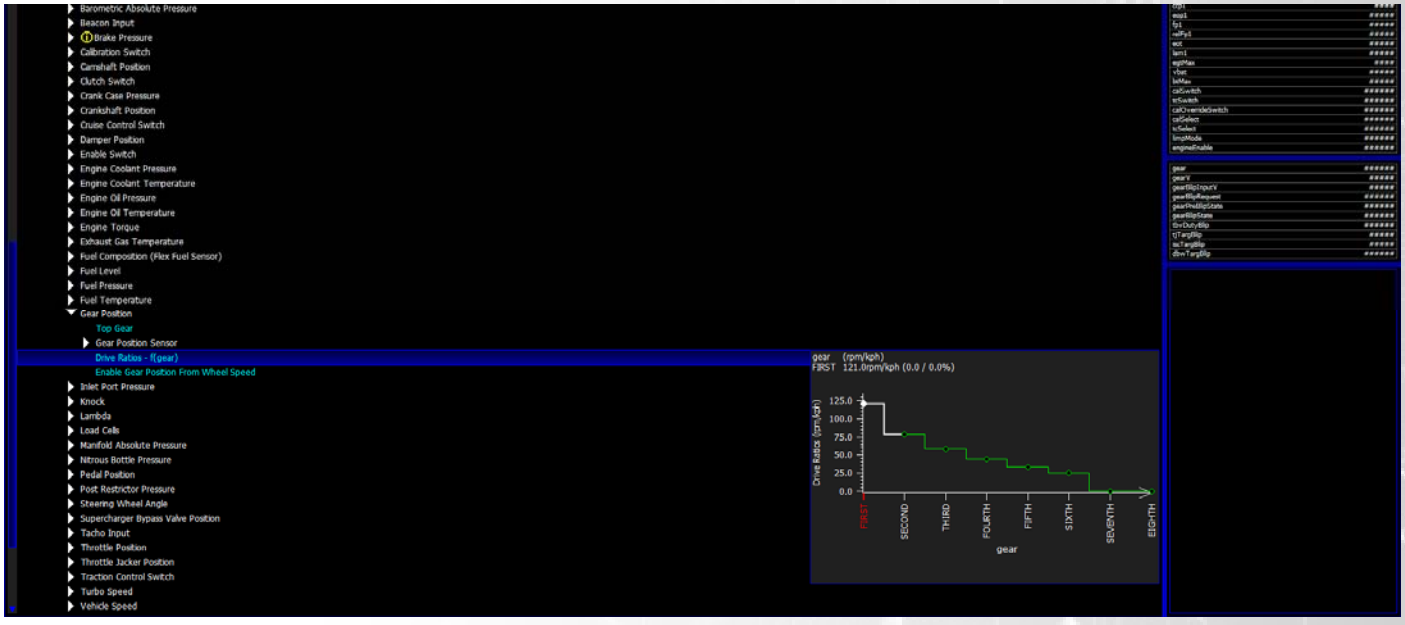
OEM DI Injectors are set in the Base map @ 17ml/s



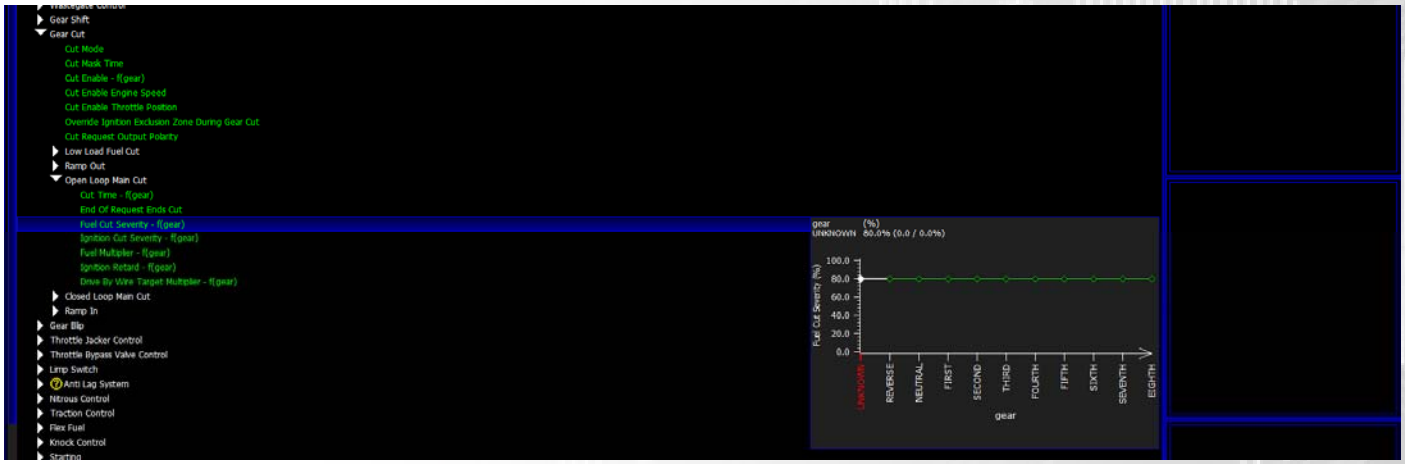
Rev Matching (Blip on DownShift) is active when VSC Sport = On, Clutch is Pressed, Brake is Pressed and RPM is Above 2000rpm. This will send a GearBlip Request which is then fully adjustable via Gearblip settings to suit engine type



The Ecu calculates the correct rev matching Rpm based on the Drive Ratios. If you are using a different Ratio to Factory you can adjust these Drive Ratios here



Flat Shifting – Means users can shift gear without removing the accelerator pedal. It is adjustable via Gear Cut Settings. When the Clutch is pressed, Throttle is greater than 60% and RPM is more than 3500rpm a Gear Cut request signal is sent causing the Open loop gear cut cals to become active. When the Clutch pedal is not pressed the Cut will end and Ramp in Stage of Gearcut will become active to allow smoothing of torque cuts.



GT86 FAQ and Help

Q) Do you control the OEM VVT

A) Yes, this is adjustable via Variable Valve timing calibrations, Can Change Intake and Exhaust Cam Targets

Q) Can we do engine Swaps with the GT86/BRZ Kit

A) Yes, The software is fully open allowing you to change Engine Types, Trigger setup and much more. Please Note Fuel Drivers 1-4 are modified to work with OEM DI Driver Module so don't use these to drive normal injectors if changing engine.

Q) Can we Turbocharge the engine

A) Yes, you can change the OEM Map sensor to which ever sensor you like and then setup the tables to allow for positive pressure.

Q) Do you Supply a Base map for the Kit

A) Yes as with all out kits we supply a very good base calibration to get everything working for you

Q) Does the Traction Switch and VSC Sport Switch come into the ECU Via Canbus

A) Yes, Slave AN23 is TRC Off Switch, can be used for Custom Maps or for TC Switch, Slave AN25 is VSC Sport Switch, can be used for Custom Maps or for TC Switch also

Q) How do we change calibrations

A) This is done via the OEM Steering wheel Cruise buttons, Up is Cal Up, Down is Cal Down, Pulling back is Cal Overide for rolling antilag

Q) Can I install different in tank pump?

A) Yes, the Syvec's communicates with the OEM Fuel Pump Ecu to allow PWM Control of the Pump so it can be adjusted to suit your new pump. This is found in Output Function – Fuel Pump - Fuel Pump PWM 1 Control

Q) What of the original features will now not work?

A) None, even cruise control works but it doesn't allow you to adjust speed on the stalk, only clamp a speed

Q) Can we use the OBD port still to Log, Read Codes and Clear them on other ecus on the car like ABS?

A) Yes via OEM Tools or Ecutek

Q) How do I adjust the Port Injector Sizing

First set the Secondary Injector Opening times in RunMode Fueling – Corrections

After you need to set the Secondary multipler difference between the DI and Port under Run mode fueling – Correction – Secondary Multipler

OEM DI Injectors flow around 650cc.. So do 650 / (Port Injectors cc) to give a good starting point on Secondary multiplier

Ensure that the Secondary Injection Opening Time values are correct from your manufacture.

After Start the engine up and monitor the Lambda1 Value and FuelMltCll1 Value. Now go to Injector Split1 and increase the values up to 50% in the area and around that the tracer is showing the engine is current at.

As the Ports start to blend in and you have the Split at 50% you need to be monitoring the Lambda1 and FuelmltCll1. If the values are different compared to before when split was at 0% then adjust the Secondary multiplier live until they are the same with the split present.. Once that is good, set the Split back to 0%,

When the OEM DI Injectors now reach their limit the Syvecs ecu will automatically bring the ports in to maintain the desired fuel requirements, If you wish to bring the port injectors in sooner then set the split table as required.

Email Support@syvecs.co.uk for a base map to suit your setup.

A	DESCRIPTION	CONNECTOR A	
	PART NUMBER	4-1437290-0	
	NOTES:	34 Way - Key1	

Syvecs Description	*Syvecs Pinout*	*Function*	*Notes*
PWR CTR OUT	A1	MAIN RELAY OUTPUT	Main Relay, Injector Relay
H-Bridge1 / SlaveOut1	A2	H-Bridge1	DBW+
H-Bridge2 / SlaveOut2	A3	H-Bridge2	DBW-
H-Bridge3 / SlaveOut3	A4	H-Bridge3	CPC Solenoid
H-Bridge4 / SlaveOut4	A5	H-Bridge4	ETCS Relay
H-Bridge5 / SlaveOut5	A6	H-Bridge5	DI Pump
H-Bridge6 / SlaveOut6	A7	H-Bridge6	
H-Bridge7 / SlaveOut7	A8	H-Bridge7	Air Con Relay
H-Bridge8 / SlaveOut8	A9	H-Bridge8	Blower Motor Relay
FUEL1	A10	INJECTOR or PWM OUTPUT	DI 1 - NEEDS TTL MOD
FUEL2	A11	INJECTOR or PWM OUTPUT	DI 2 - NEEDS TTL MOD
FUEL3	A12	INJECTOR or PWM OUTPUT	DI 3 - NEEDS TTL MOD
FUEL4	A13	INJECTOR or PWM OUTPUT	DI 4 - NEEDS TTL MOD
FUEL5	A14	INJECTOR or PWM OUTPUT	Port 1
FUEL6	A15	INJECTOR or PWM OUTPUT	Port 2
FUEL7	A16	INJECTOR or PWM OUTPUT	Port 3
FUEL8	A17	INJECTOR or PWM OUTPUT	Port 3
PWM1 /*FUEL9	A18	PWM OUTPUT	Tacho
PWM2 / *FUEL10	A19	PWM OUTPUT	Fan
PWM3 / *FUEL11	A20	PWM OUTPUT	Fan2
PWM4 / *FUEL12	A21	PWM OUTPUT	
PWM5	A22	PWM OUTPUT	VVT Intake 1
PWM6	A23	PWM OUTPUT	VVT Intake 2
PWM7	A24	PWM OUTPUT	VVT Exhaust 1
PWM8	A25	PWM OUTPUT	VVT Exhaust 2
IGN1	A26	CYL 1 IGNITION OUTPUT	Ignition 1
IGN2	A27	CYL 2 IGNITION OUTPUT	Ignition 2
IGN3	A28	CYL 3 IGNITION OUTPUT	Ignition 3
IGN4	A29	CYL 4 IGNITION OUTPUT	Ignition 4
IGN5	A30	CYL 5 IGNITION OUTPUT	
IGN6	A31	CYL 6 IGNITION OUTPUT	Starter Relays
PWRGND	A32	POWER GROUND	Throttle Ground
PWRGND	A33	POWER GROUND	Throttle Ground
PWRGND	A34	POWER GROUND	ECM Ground

B	DESCRIPTION	CONNECTOR B	
	PART NUMBER	3-1437290-7	
	NOTES:	26 Way - Key1	fs

PWRGND	B1	POWER GROUND	Ground

CAN2L	B2		
CAN2H	B3		
KNOCK	B4	KNOCK	
KNOCK2	B5	KNOCK2	
PVBAT	B6	CONSTANT 12V	
IVBAT	B7	12v	
LAM1A	B8	Lamv / LamD1+/ LamLun1	2.2v
LAM1B	B9	Lami / LamD1- /LamIP1	1.8v
LAM1C	B10	LamLIA1	
LAM1D	B11	LamGND / LamLVM1	
LAM1HEATER	B12	LAMBDA HEATER	Heater
IVBAT	B13	12V	
LAM2A	B14	Lamv / LamD1+/ LamLun1	Spare input AN10
LAM2B	B15	Lami / LamD1- /LamIP1	
LAM2C	B16	LamLIA1	Spare Input AN11
LAM2D	B17	LamGND / LamLVM1	
LAM2HEATER	B18	LAMBDA HEATER	
IVBAT	B19	12V	Power Supply
KLINE	B20	Kline	
RS232RX	B21	RS232RX	
RS232TX	B22	RS232TX	
LANRX-	B23	Cat5 Pin2	
LANRX+	B24	Cat5 Pin1	
LANTX-	B25	Cat5 Pin6	
LANTX+	B26	Cat5 Pin3	
C	**DESCRIPTION**	CONNECTOR C	
	PART NUMBER	4-1437290-1	
	NOTES:	34 Way - Key2	
KNOCK GROUND	C1	KNOCK GROUND	Knock Ground
ANGND	C2	SENSOR GND	TPS,
ANGND	C3	SENSOR GND	PPS
ANGND	C4	SENSOR GND	Maf Ground
5V OUT	C5	5V OUT	Exhaust Cam Sensor, TPS
5V OUT	C6	5V OUT	PPS
5V OUT	C7	5V OUT	
CAN L	C8	Can Low	
CAN H	C9	Can High	
AN01	C10	BI-POLAR INPUTS	Crank Sensor
AN02	C11	BI-POLAR INPUTS	
AN03	C12	BI-POLAR INPUTS	TPS 1
AN04	C13	BI-POLAR INPUTS	TPS 2
AN05	C14	UNI-POLAR INPUTS	Exhaust Cam Sensor 1
AN06	C15	UNI-POLAR INPUTS	Exhaust Cam Sensor 2
AN07	C16	UNI-POLAR INPUTS	Intake Cam Sensor 1
AN08	C17	UNI-POLAR INPUTS	Intake Cam Sensor 2
AN09	C18	VOLT-INPUTS	MAP Absolute Sensor

AN10	C19	VOLT-INPUTS	PPS1
AN11	C20	VOLT-INPUTS	PPS2
AN12	C21	VOLT-INPUTS	Di Pressure
AN13	C22	RESISTIVE INPUTS	ECT1
AN14	C23	RESISTIVE INPUTS	Air Charge Temp
AN15	C24	RESISTIVE INPUTS	Cruise Switch
AN16	C25	RESISTIVE INPUTS	Oil Temp
EGT1-	C26	EGT1 -	
EGT1+	C27	EGT1 +	
PWR CTR IN	C28	MAIN RELAY INPUT SW	Ignition Switch
AN S1 / Slave An01	C29	UNI-POLAR INPUTS	Starter Signal
AN S2 / Slave An02	C30	UNI-POLAR INPUTS	NOT Avaiable
AN S3 / Slave An03	C31	UNI-POLAR INPUTS	Clutch Sw
AN S4 / Slave An04	C32	UNI-POLAR INPUTS	Brake Sw
AN S5 / Slave An05	C33	UNI-POLAR INPUTS	A/C Presuure
AN S6 / Slave An06	C34	UNI-POLAR INPUTS	ST1-