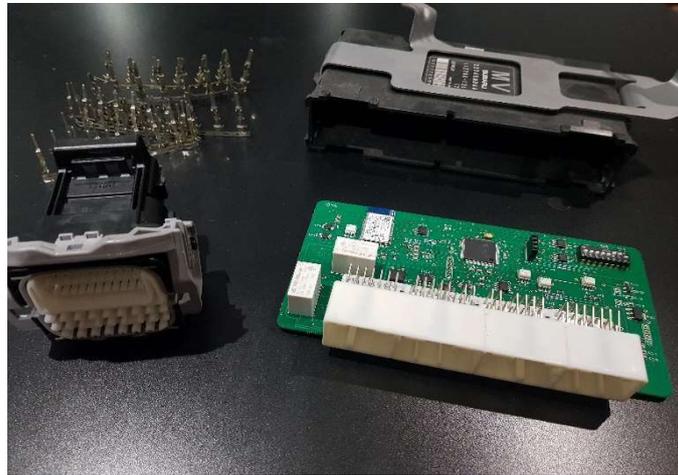


# Rebel LS-BRZ/86/FRS PnP CANBUS Translator

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## Overview

The plug in Haltech Rebel LS translator is used to interface the Rebel LS with the BRZ/GT86 system to get the factory electronic systems working as original, such as the instrumentation, AC, Cruise Control and the start system.

The Haltech Rebel has only one Canbus channel, and it is dedicated to Haltech Canbus messaging. It also runs at a different speed to the BRZ/GT86, so the networks are not compatible. The translator connects to the BRZ/86 Canbus and also the Haltech Canbus, and translates various signals between the two networks.

The translator connects via two of the original BRZ/86 ECU connectors, and can read various signals within the vehicle such as Brake Pedal, Accelerator Pedal, Start switch. The remaining two connectors on the translator header connect to the Rebel Harness, and includes the wiring to the Rebel Accelerator pedal and Haltech Canbus plugs.

The pedal wiring allows the use of the BRZ/86 accelerator pedal without having to change to the LS pedal or do any rewiring. Note: The BRZ./86 Pedal will need to be calibrated during the Rebel Setup.

The translator emulates two Haltech I/O boxes. These “virtual” I/O Boxes contain data from the BRZ such as Wheel speeds, G-Force, Brake Pressure, AC/Start Request and VDC button status, which can then be utilized in the tune.

Virtual Outputs include the Radiator Fan Relays and AC clutch, which then drive the BRZ/86 Fan & AC relays.

# Installation

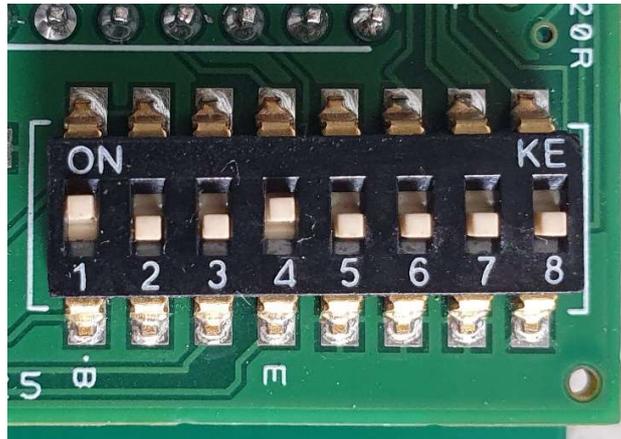
## Basic Install

The Canbus translator is installed in the original FA20 ECU plastic enclosure. To install, remove the 4 plugs on the original ECU (located near the passenger A-pillar under the glovebox). Pry the plastic retaining clips at the side of the enclosure slightly to enable the face plate surrounding the plug receptacle to be removed. Slide out the original ECU circuit board and replace with the translator circuit board. Re-install the unit to the vehicle and Connect A & C plugs back to the vehicle (B & D plugs go to the Haltech).

## Translator Hardware Setup

The translator will come pre-set for your application stated at time of order. However, this can be changed if the setup changes.

Basic settings are set by the eight DIP switches on the top of the circuit board.



DIP Switch configuration settings

Switch1	Haltech Canbus termination Resistor - (ON)
Switch2+3	Haltech to Chassis Canbus Link (Leave OFF)
Switch4	Chassis Canbus termination resistor (ON)
Switch5	BRZ/GT86 Chassis Auto/Manual Selector OFF(MAUAL) - ON(AUTO)
Switch6	
Switch7	
Switch8	Upgrade Mode - Switch to ON and cycle power to force flash upgrade mode (Via Serial/USB cable, or Canbus (Tactrix Openport J2534 or compatible ELM) Upgrade mode can also be achieved via Canbus

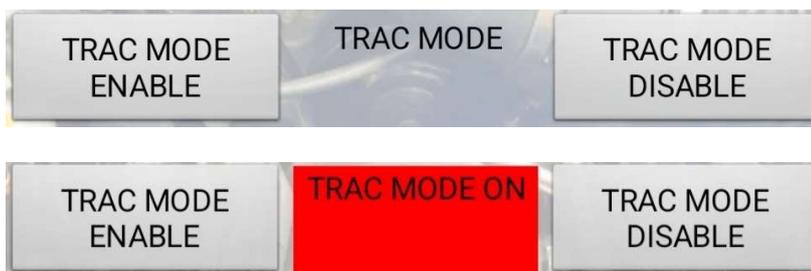


## Operation

The “Plug in” Canbus Translator is designed to provide a full factory OEM experience. Once set up correctly, it should operate as any normal vehicle and give the same indication on the dash just like the original FA20 Engine (Tach, Coolant Temperature Gauge, Oil Temperature Gauge (facelift models), Oil Pressure/Charge/Check Engine warning lamps. . With the ignition ON, The Oil Pressure, Alternator and MIL (Check Engine) lamps should be illuminated. These should extinguish once the engine is running. Cruise control also works as standard with the Cruise and SET lamps showing the status on the dash cluster display.

### Traction/VDC Full Disable Mode

The Traction disable mode (also known as TRAC MODE or PEDAL DANCE FUNCTION) is a test feature within the BRZ that is used to totally disable the traction control VDC (Stability Control) . With the standard BRZ/86 VDC/Traction OFF buttons, they do not TOTALLY disable the functions. With the translator they can be totally disabled via the APP and/or a switch input to the translator. The status is shown on the cluster by the Traction Control warning lamp and ABS warning lamp illuminating when the mode is active. The status is also shown in the App with the TRAC MODE ON illuminating RED. The mode can be changed by pressing the TRAC ON or TRAC OFF button within the App, or flicking the a switch wired to the TRAC MODE digital input to the translator. Pressing the buttons within the App will override the switch position. A change of the switch position, will override the previous setting of the App. Any mode change withing the app will default to OFF (normal operation) every key cycle. If you would like the mode to be ACTIVE every time the vehicle is started, you will need to use the switch input (or ground the input wire to make the setting permanently ON).



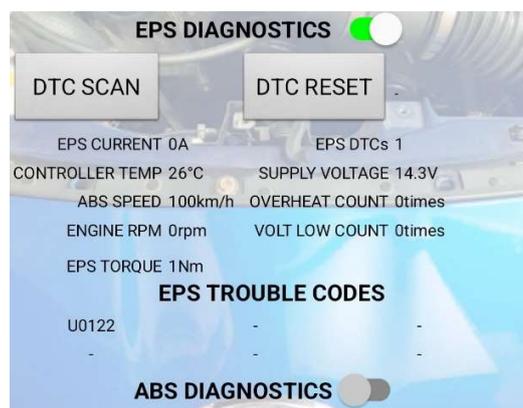
## ABS Diagnostics

The translator and Bluetooth app can be used to provide diagnostics of the ABS system. To Access ABS diagnostics, press the ABS diagnostic switch on the app which will then provide live running data of various ABS data, such as wheel speeds. It will also show any ABS trouble codes with the ability to clear and reset fault codes. The ABS diagnostics was added due to the large number of enquiries from previous customers having the ABS warning lights remain on after completing their conversion. Unless you had a decent OBDII scan tool, it was hard to access the ABS data or fault codes. In most previous cases the ABS faults ended up being issues with the wheel speed sensors or steering angle sensor. If the steering linkage is removed during the engine swap and not put back at the 0degree mark, the steering angle sensor will be out of calibration and flag up and error. Even worse is if the steering wheel is rotated several times with it disconnected from the steering rack, which ultimately results in a broken clock spring (the 2<sup>nd</sup> most common fault after the engine conversion).



## EPS Diagnostics

The translator and Bluetooth app can be used to provide diagnostics of the EPS (power steering) system. To Access EPS diagnostics, press the EBS diagnostics switch on the app which will then provide live running data of various EBS data, such as received vehicle speed. torque, controller temperature and battery voltage.. It will also show any EPS trouble codes with the ability to clear and reset fault codes. The EBS diagnostics was added to compliment the EPS calibration feature of the translator. Unless you had a decent OBDII scan tool, it was hard to access the EPS data or fault codes. One interesting reading is the OVERHEAT COUNT and VOLTAGE LOW COUNT. These values do not reset with power cycling. Some drivers who do serious track/drift work report that the power assist can stop working after a severe workout. The Trouble codes and fault counters can be useful to determine the exact cause of the power steering going into a limited assist mode.

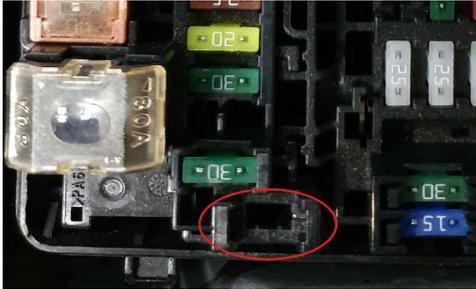


## Test Mode

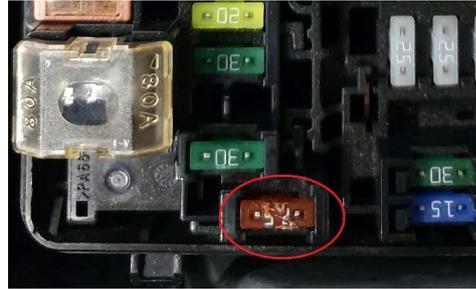
If the engine is NOT running. The translator can be put into “Test Mode” by long pressing the “TEST MODE” button on the top of the phone/tablet display. Once in test mode, the translator will cycle various outputs to enable you to check they function correctly. This includes the radiator fans (3 speeds), Reverse Lamp, AC Variable Displacement Solenoid and the variable speed fuel pump. It also shows a fake tachometer display proportional to the accelerator pedal position. The oil pressure lamp will turn off in this mode and will illuminate if the brake or clutch pedals are depressed.

To exit TEST MODE, press the TEST MODE button on the display to exit and return to normal operation.

Test mode can also be engaged by placing a spare fuse in the delivery connector “fuse holder” in the engine bay fusebox. This must be done after the ignition is turned on. Do not leave the fuse in there permanently. If the fuse is present on power-up, the translator will enter UPGRADE mode and be inoperable until the fuse is removed and the ignition re-cycled..

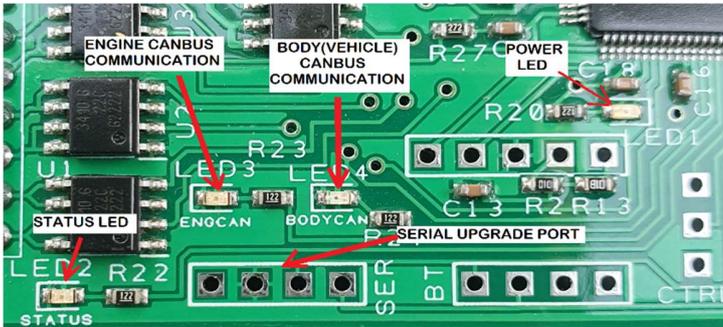


No Delivery Fuse (normal operation)



Delivery Fuse connected (Test /Upgrade Mode)

## Startup checks and Troubleshooting



### Translator Status LEDs

POWER – Illuminates when powered up

STATUS – Blinks when operating

ENGINE CANBUS – Flashes with Communication to Haltech

CHASSIS CANBUS – Flashes with Communication to ABS

The Engine (ECU) and Chassis (ABS) Communication can also be checked on the App which will flash the ENGINE CANBUS and VEHICLE CANBUS icons when communicating.

ENGINE CANBUS

VEHICLE CANBUS

## Software Update

Updates will be available from time to time and when extra features are added. End users can upgrade the software themselves via three methods using the AGT Canbus Module PC Application:

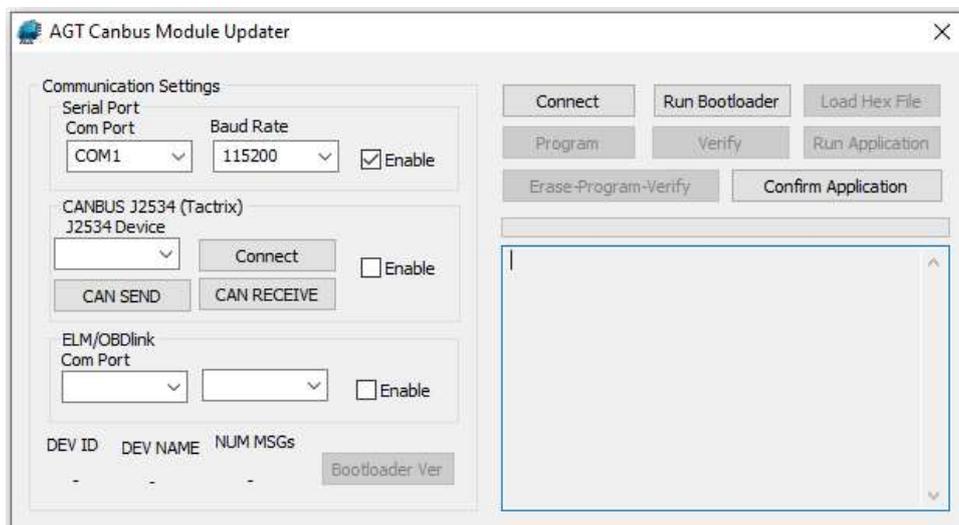
A USB/RS232 Serial cable and PC connected to the serial connection port on the translator labelled SER.

A compatible J2534 Openport device plugged into the vehicles OBDII port (such as a Tactrix 2.0)

A compatible ELM327 device (not the cheap Ebay ELM copies)

The translator must be put into Upgrade Mode either via the PC Application, or by turning the DIP switch number 8 to the ON position.

Further details on the flash upgrade procedure can be found in the Flash Upgrade Instructions with the software



# Wiring

## Haltech Rebel LS Translator wiring

A36  
(D)

7			6 IGNITION SWITCH (PINK)			5			4			3			2			1		
17	16	15	14	13		12	11		10	9		8 PEDAL APP2 5V (ORANGE)								
27	26	25	24	23		22	21 BRAKE SWITCH N/O (LI GREEN)		20	19 ALTERNATOR LAMP		18								
34	33					32	31 PEDAL APPZ 0V (BLACK/WH)		30 PCM RELAY CONTROL*	29	28 AC CLUTCH RELAY CONTROL									

A34  
(B)

6			5			4			3			2 ENGINE GROUND			1		
16 PEDAL APP1 SENSOR (WHITE/B)	15	14	13	12	11	10	9 FANZ RELAY CONTROL	8	7			17					
27	26 PEDAL APP1 0V (BLACK/WH)	25 SPARES FUEL PUMP CONTROL	24 SPARES FAN1 RELAY CONTROL	23	22	21	20	19 HALTECH CANBUS CAN-LOW (BLUE)	18 HALTECH CANBUS CAN-HIGH (WHITE)		17						
35	34 PEDAL APP1 5V (ORANGE)	33 PEDAL APP2 SENSOR (WHITE/RED)	32	31				30 GROUND	29	28							

### Mandatory Wiring

Translator Plug/Pin	Function	Colour	Haltech Plug/Pin
B2	Engine Ground	Black	Canbus DTM Pin2
B16	APP1 Sensor	White/Brown	APP Plug Pin B
B18	Haltech CAN-HIGH	White	Canbus DTM Pin3
B19	Haltech CAN-LOW	Blue	Canbus DTM Pin4
B26	APP1 0V	Black/White	APP Plug Pin A
B33	APP2 Sensor	White/Red	APP Plug Pin E
B34	APP1 5V	Orange	APP Plug Pin C
D6	Ignition Switch	Pink	To Haltech IGN wire
D8	APP2 5V	Orange	APP Plug Pin F
D21	Brake Switch	Light Green	APP Plug Pin G

## Haltech Setup

The easiest way to setup the Rebel with the translator is to download the Rebel Tune Map from the AGT Website. This is a modification of the default LS3 base map to suit the translator functions. You can alternatively download an instruction sheet showing all the changes from the default Rebel tune map to do the changes manually (if you already have a Haltech tune set up or using a different base map). There are a number of ways you can set the system up depending on your modifications and preferences. This is the advantage of going aftermarket, the system is very flexible.

**The following does not need to be set up in the tune for normal operation:**

**Radiator Fans** – This is read directly off the Haltech Canbus and the translator drives the BRZ/86 Fan relays. Alternatively, you can assign fan outputs from the Haltech's spare I/O and run to your own relays, or even drive a fan direct from the Rebels 25 Amp output. You can access the fan relay wiring via the translator via the B & D plugs (listed in the above diagram) if you wish to control manually.

**Gauges** – The Tacho, Temperature Gauge, Check Engine, \*Alternator and \*Oil Pressure lamps are driven directly from the Haltech Canbus broadcast data and driven by hardware within the translator, nothing needs to be done in the tune.

\*The Alternator Lamp needs a bridge wire connected to the FA20 Alternator connector to work (shown below). The Oil Pressure Lamp needs to be hard wired to the cluster via the translator, or alternatively can be directly wired to a spare output from the Haltech.

