DBW2.5

ProyectECU

Description

This module provides the functionality you need to run almost any DBW (Drive by wire) electronic throttle body with ProyectECU ECUs (and other brand ECUs).

Its main function is to pass the movement of the pedal to the electronic accelerator and nothing else. Fast response, and simple operation without complications.

Congratulations! This module is designed to be very easy to connect, very simple, very easy to use and calibrate!!!

Wires up in minutes, uses only a few signals, works with all types of throttles and pedals.

It is designed for the fastest pedal-to-body response for sporty use.

The throttle body should have a single motor (which will have a motor + and motor - terminal on its connector) and TPS (throttle position) tracks.

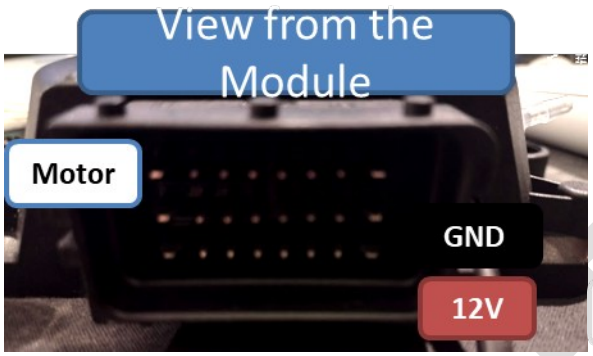
As stated above, there should probably be at least 4 terminals on a supported throttle body. They are Motor +, Motor -, DBW position, 5v and signal ground.

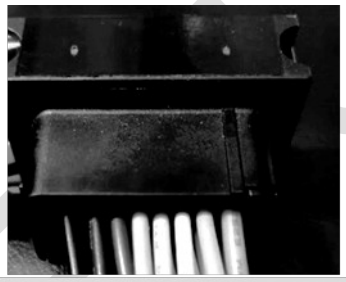
The Pedal must be capable of sending a 5v proportional signal. That said, a compatible pedal must at least have 3 TPS signals, 5v and Ground signal. But most have 6 terminals or more. (be very careful on pedal pinout).

Diagram

DBW2.5

Motor1+	5V	Pedal in	DBW2 in	DBW1 in	TPS ecu	AC	Motor2-
Motor1-				GND	ALS Arm	Launch	GND
Motor2+	Launch O	PedalS in	DBW2S in	DBW1S in	TPSS ecu	Idle	12V





colors may vary

The connector has 24 wires, of which only a few have function, the other wires can be removed if desired.

Function of each cable is written below:

12V.- Power supply (to relay)

GND.- Ground (ground is common for sensors, and other devices)

Motor+, Motor- .- To wire the DBW electric motor

5V.- 5V reference output for Pedal and Electronic Throttle Position Sensor

Pedal in, PedalS in.- Pedal signal input (variable, 0 to 5V)

DBW1 in, DBW2 in, DBW1S in, DBW2S in.- Electronic Throttle signal input (variable, 0 to 5V)

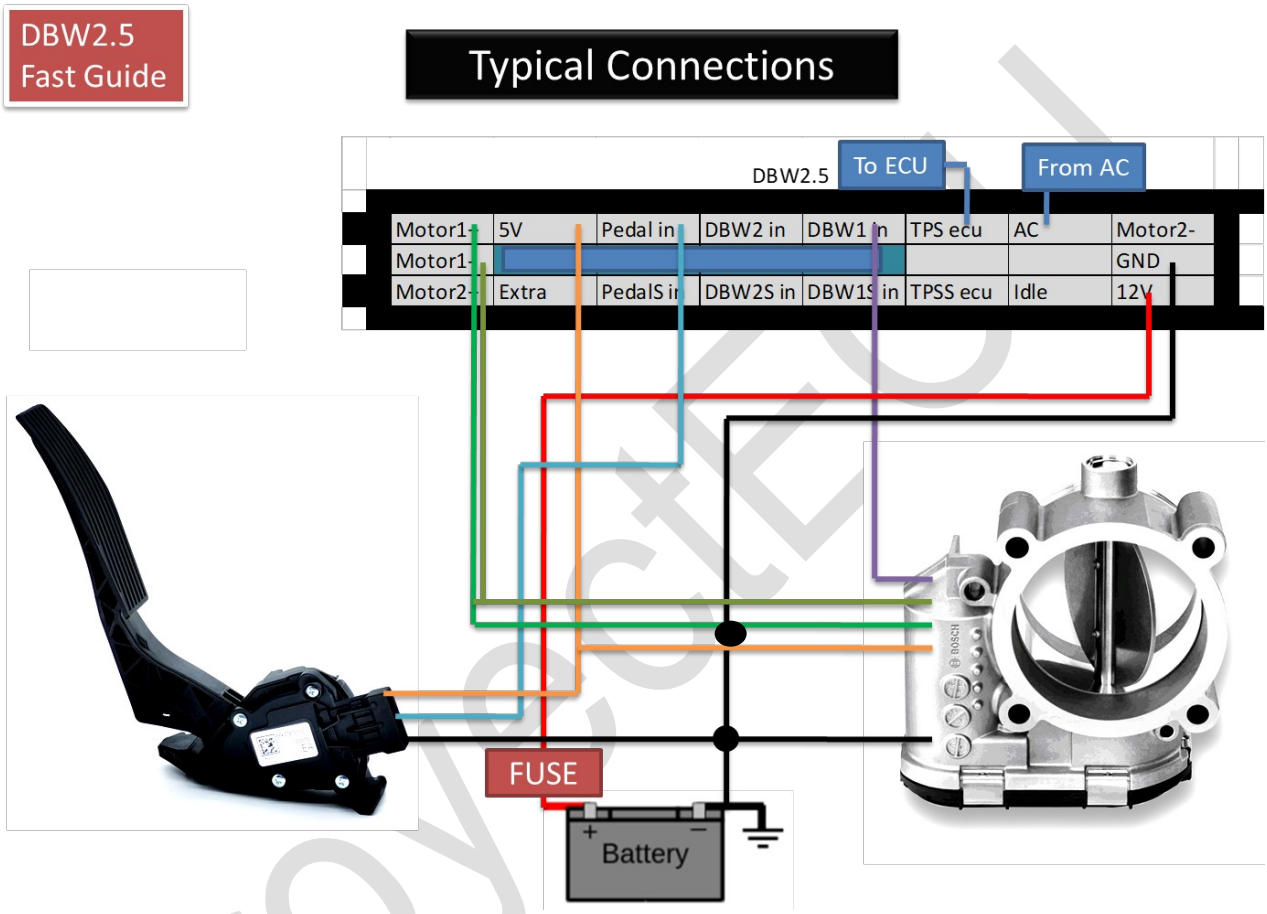
TPS ecu, TPSS ecu.- Output for ECU TPS signal (pedal in signal can also be used)

AC.- AC system activation input (used to compensate for AC input) (12v positive or 5V positive for activation, 0V for deactivation)

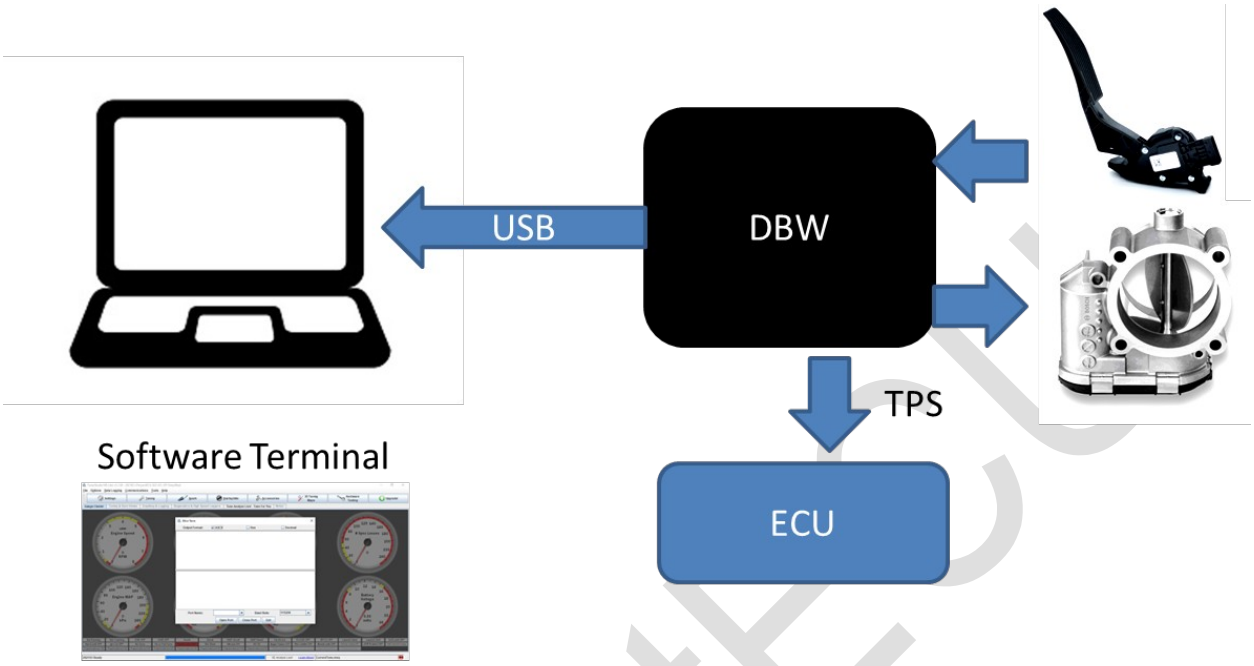
Launch in, Launch O, ALS arm.- for Simulated Rally ALS functionality, the Launch O signal on the DBW 2.5 is TTL level signal to ground for activation

Idle.- 5V PWM input for idle, 100% duty is min idle, 0% duty max idle

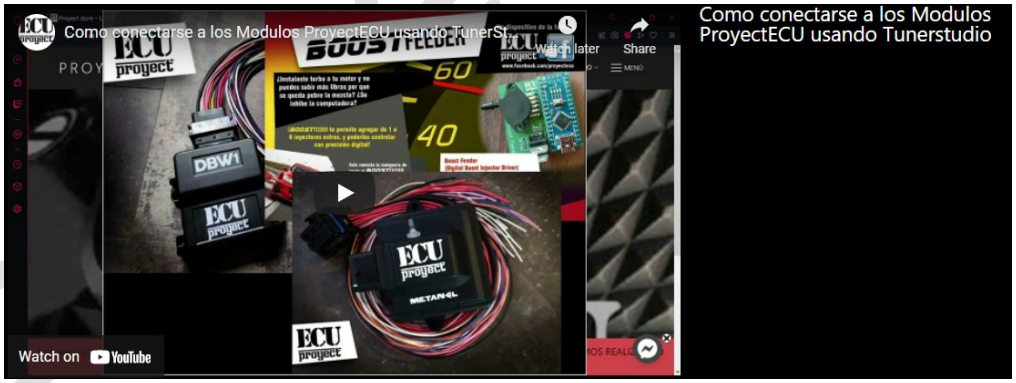
Connections



Programming / Calibration

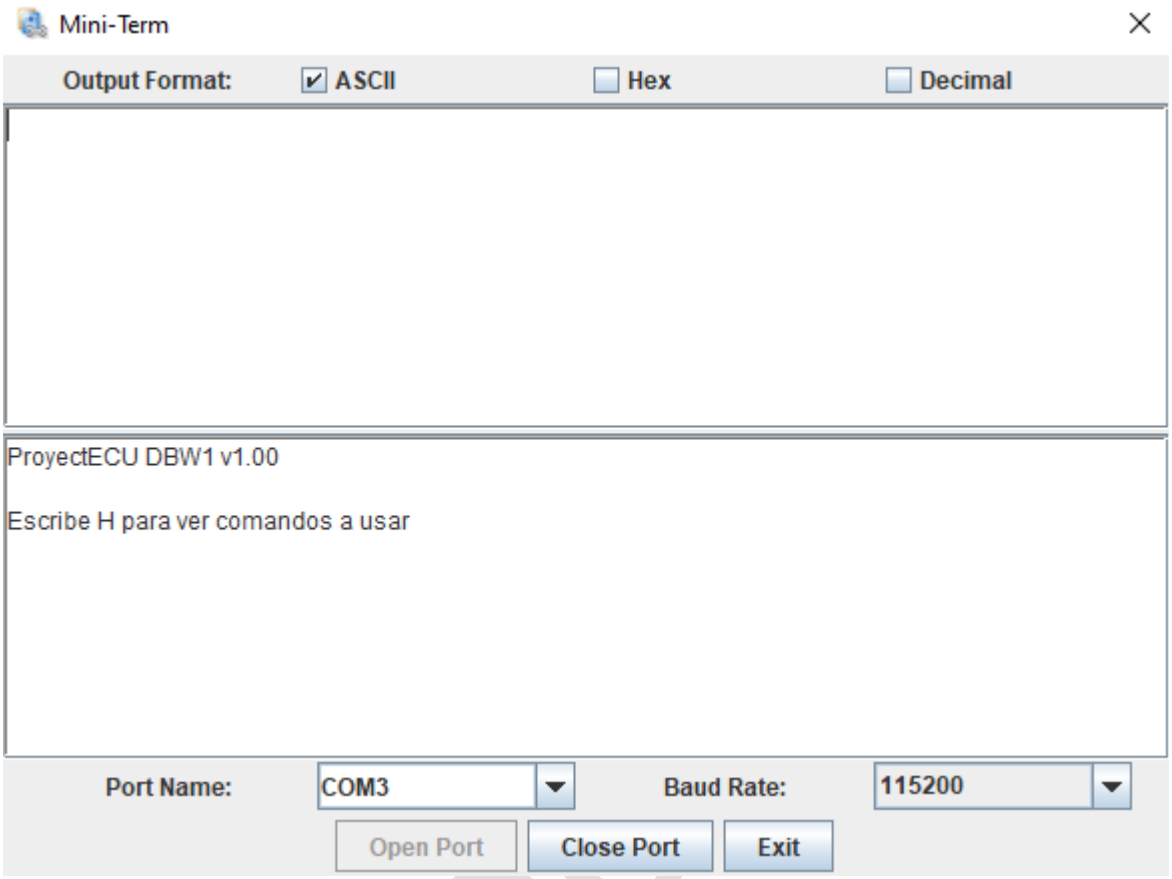


The module has a USB cable, we must connect it to the laptop and install the CH340 driver (download from Page ProyectECU.com/downloads), then a Terminal software must be used, the recommendation is to use TunerStudio with its MiniTerminal as indicates in the video tutorial (How to connect to the ProjectECU Modules using Tunerstudio). You can see the video at: ProyectECU.com/en/descargas

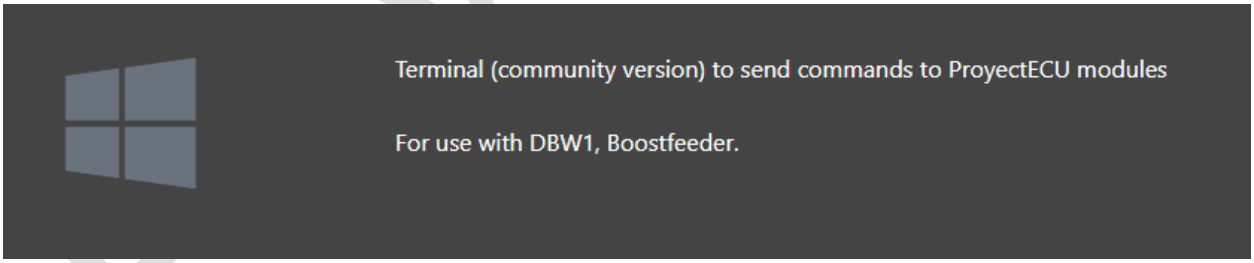


1.- We must select the COM port of the module (Windows assigns it automatically) we choose it from the PORT NAME menu, we choose BAUDRATE 115200.

2.- We click on OPEN PORT (if not connect to the first please disconnect module, close Tunerstudio and repeat the process), and in the window we should see a Welcome saying that we write H to see commands to use:



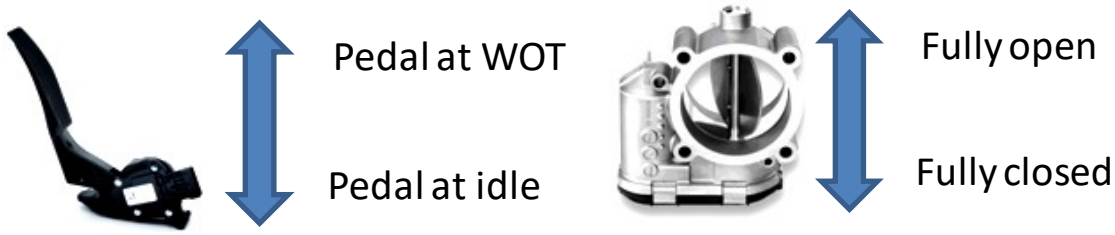
We can also use the ProyectECU Terminal app, in a very similar fashion:



Located at: https://www.proyectecu.com/en/descargas-modulos/

3.- We write in command H (uppercase) and hit Send. It will send us a menu of options which we will give a brief explanation:

Write V to see parameters.- We can see the current calibration values,



Idle Aperture (necessary opening to maintain idle),

AC Aperture (extra opening to maintain idle),

PIN Value AC (pin to detect AC system on/off, 0 is function off, 1 is function on).

Write C to calibrate Electronic throttle body.- The electronic body will close, and after a second it will open, and it will show the auto-calibration values. (If it wants to move in the opposite direction, please switch motor+ and motor- cables), values must be on the 0 to 200 range for "DBW closed", and on the 800 to 1000 range for "DBW fully open". **If these values are different from the recommended, it means there's an error on the pinout or connection and must be corrected.**

Write A to calibrate Pedal at rest.- It takes the value of the pedal at rest, therefore we must release the pedal and then write command A, with this it will show the new calibration value (values must be on the 0 to 200 range). **If these values are different from the recommended, it means there's an error on the pinout or connection and must be corrected.**

Write B to calibrate Pedal fully pressed.- It takes the value of pedal fully depressed, therefore we must fully depress the pedal and then write command B , with this it will show the new calibration value (values must be on the 800 to 1000 range). **If these values are different from the recommended, it means there's an error on the pinout or connection and must be corrected.**

Write I to program minimum opening Idle.- This value indicates the minimum electronic body aperture to prevent the engine from stalling, 1000 means fully open, 0 is fully closed, so we should write values between 100 and 200 (10% to 20%).

ACSI to activate extra opening pin with AC.- Activate input pin for AC detection and add extra opening.

Write ACNO to disable opening pin extra with AC.- Disables the input pin function for AC detection.

Write AC to program extra opening with AC.- This value is very similar to Idle, 0 is without extra opening, 1000 is fully open, we must use values between 100 to 200 (10% to 20%).

Write S to save calibrations.- Save the parameters and calibrations on disk (it is not erased when removing the battery from the vehicle).

We can also Write SHOWME Start logging internal input and output values in Realtime (useful for initial setup).

FABRICA reset to factory values

PCP Type 1 to activate Pedal parity check, 0 to deactivate

PC1 Type 1 to activate DBW1 parity check, 0 to deactivate

PC2 Type 1 to activate DBW2 parity check, 0 to deactivate

PFP Set Pedal Parity Max Factor in % (this is the maximum permissible deviation between Pedal in and PedalS in signals)

PF1 Set DBW1 Parity Max Factor in % (this is the maximum permissible deviation between DBW1 in and DBW1S in signals)

PF2 Set DBW2 Parity Max Factor in % (this is the maximum permissible deviation between DBW2 in and DBW2S in signals)

IDA Type 1 to activate ext Idle mode, 0 to deactivate ext Idle mode

IDL Set ext Idle low limit (from 0 to 1000)

IDH Set ext Idle high limit (from 0 to 1000)

ALi Set pedal idle rest zone (from 0 to 1000) recommended: 5 to 30

ALo Set TB antilag opening position (opening when antilag activated)

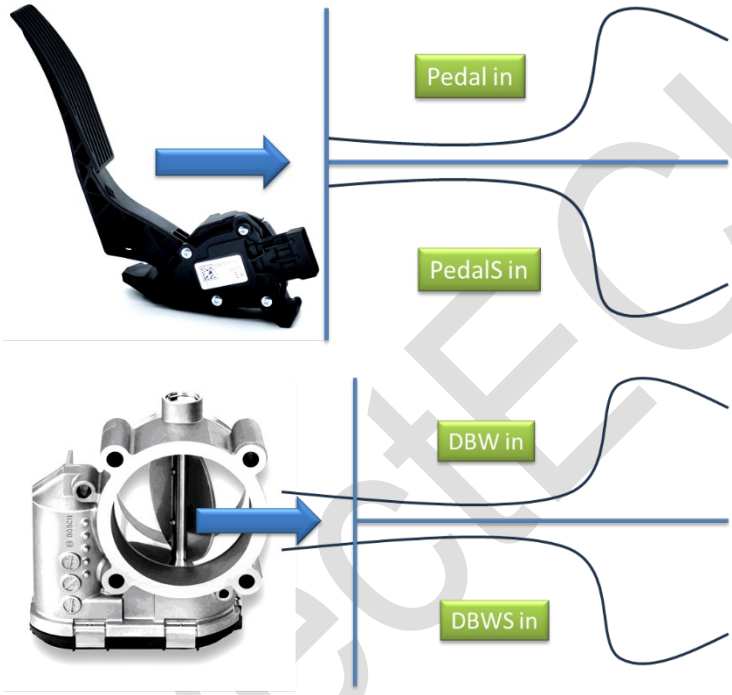
ALt Set antilag maximum time activated (in ms, recommended 1000 to 3000)

ALf Set pedal ALS full throttle trigger to activate ALS or Launch

DBW PARITY CHECK (REDUNDANCY INPUTS)

Parity check can be activated for checking that that an input signal has not been lost or has been damaged.

This requires connecting the secondary signal on the Pedal and/or on the Throttle body(s). This secondary signal actuates opposite of the original signal:



The module will not check that both signals are always opposite, and a parameter exist in user configurable fashion (parity max factor) to permit some deviation/noise between the two signals.

This parity check can be activated individually: Pedal/DBW1/DBW2 or any combination, to offer flexibility. Parity max factor also can be configured individually for each.

In the situation the parity is not meet, the module will enter in fault mode, also in individual fashion:

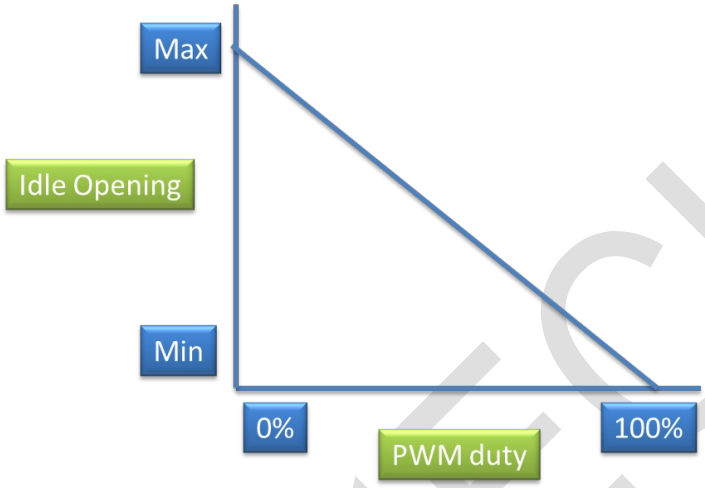
- If the pedal has fault mode, then both DBW TBs will stay in configured Idle mode, and will receive AC and all idle configured data.
- If a DBW TB is on fault mode, the other will remain operations as normal, and the faulty DBW TB will be turn off.

IDLE PWM 5V INPUT

The PWM idle input, is a 5V pwm input that receives signal from the ECU, some ECUs has capability to output 5V PWM signal to control idle externally. If your Ecu is capable of this, you can connect the PWM output and control the Idle. Some user configurable parameters on the DBW module are permitted Max

RPMs and permitted Min RPMs. The idle detection comes in the ECU side, and the idle function will only control the minimum TB opening position. It doesn't override the pedal position or TB function.

Maximum PWM duty (100%) means minimum idle opening, Minimum PWM duty (0%) means maximum idle opening.



Simulated Rally ALS

The simulated Rally ALS (Anti Lag System) for short "SRALS" intend to implement Rally antilag on ECUs that doesn't have a dedicated Rally antilag.

To work some signals and conditions are required, let's start with signals:

- Arming input signal.- to turn on the SRALS, this will be keep working as far as the arm signal is put to GND.
- Launch output signal.- the DBW module will take control of the launch input on the ECU, on the ECU RPM and TPS parameters needs to be lowered so the Launch/antilag function will trigger with just the input at any times.
- Launch input signal.- because now the DBW module controls the Launch on the ECU, to have Launch functionality now the Launch input will be on the DBW module. The launch will be activated at any time if the launch pin is put to GND and the minimum TPS (Alf) parameter is meet.

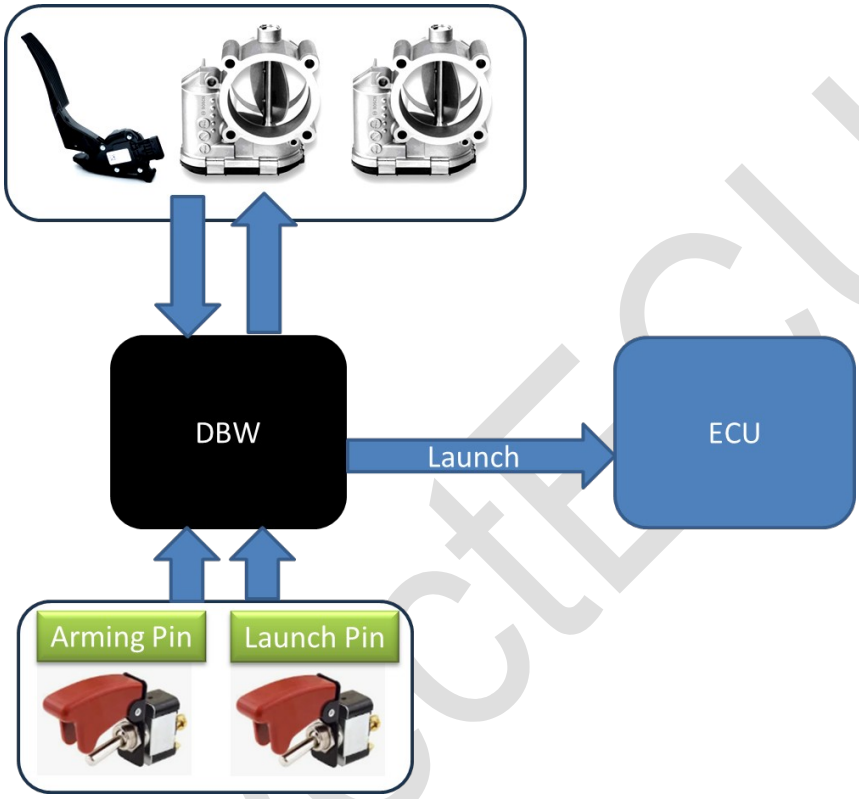
HOW it works (conditions):

The SRALS works by opening to a user configurable DBW opening position, and to activating the Launch function on the ECU by using the Launch Output.

When ARM is activated the DBW will look for two conditions: a WOT event has happened, and an idle pedal position has been triggered. Then the SRALS will start working until the end of the internal

seconds counter (user configurable), when pedal is pressed again, or the internal counter finished the SRALS will stop, and normal operation will occur.

The next event of SRALS will only happen if a new WOT condition occurs and then a new idle pedal position event is detected.



Recommended procedure for installation and calibration:

1.- Gather pinout information about your DBW pedal and DBW throttle body (TB). This step is the most important step **(most installation failures happen on this step).**

2.- Connect USB to the laptop or PC and use a serial terminal to start sending commands (Tunerstudio or ProyectECU terminal or other terminal software should work, use 115200 baud, 8bit.). Visualize if the module is a DBW1, DBW1.1, DBW2 or DBW2.x unit.

3.- Connect 12v, GND, 5v reference to Pedal and TB, GND to Pedal and TB, and signals from Pedal and TB.

4.- Turn on the DBW module (ECU or car is not necessary for operation). If the connection was correct the operation should work now, you can see that the TB is moving following the Pedal movement.

5.- If not working, means the pinout was not correct on Pedal and/or TB, to troubleshoot we must monitor either Pedal values and/or TB values. For this, two methods are available:

A) Calibration procedures, Typing A, B and C will calibrate values and report current calibration value. With pedal not pressed type A, and you should get a value from 0 to 200. With Pedal fully pressed type B, and you should get a value from 800 to 1000. Type C to calibrate TB, TB first should try to get to fully closed position, then it should try to get to fully open position, and then report calibration values DBW closed and fully open, closed values should be from 0 to 200, and fully open values should be from 800 to 1000. Any deviation of this means the corresponding part was not wired properly.

B) Realtime logging, typing the command SHOWME will start to log data from the module, here you should take a look at the data: Pedal: XXXX must show values from 0 to 1000, 0 to 200 values must be for pedal not pressed, and values from 800 to 1000 with pedal fully pressed. DBW: XXXX must show values from 0 to 1000, 0 to 200 values must be for TB closed, and values from 800 to 1000 for TB opened. Any deviation of this values means the corresponding part was not wired properly.

For use only on the track, its use on the street is not allowed.

Its installation must be carried out by a SPECIALIZED WORKSHOP.

14/May/2025