

# SELECT-A-MAP<sup>®</sup>

## Diesel Control ECU

PERFORMANCE | ECONOMY | CHOICE

five instantly  
switchable maps  
using a remote  
key fob:

- ① Standard Map
- ② Economy Map
- ③ Fast Road Map
- ④ Very Fast Road Map
- ⑤ Reduced Power Map



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## Diesel Control ECU

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### Introduction

We are diesel performance tuning and diagnostic specialists, with many years experience as a very respected Superchips and Evolution Chips dealer. In recent years we began to notice that a growing number of new vehicles were implementing ECU technology such as tri-core processors and integrated security features, often referred to as 'tuner Protection', that could not be remapped without risking ECU damage or warranty issues. Diesel tuning boxes seemed to be the only alternative solution to this increasing problem, the majority of which provide crude control of fuelling that has no relation to engine speed and load and no means to reduce fuelling, which limits their ability and can result in frequent over-fuelling, leading to poor fuel economy and DPF clogging.

This inspired us to develop our own solution that integrated most of the best features of a professional remap, with all the convenience of a removable tuning box.

We also asked customers what their main requirements were when considering diesel tuning:

- **They did not want their vehicle ECU to be removed/stripped for re-mapping, especially during the warranty period, which can be as much as 7 years on some vehicles.**
- **A choice of enhanced performance maps was preferable, ideally with a lower power option and an option to default to standard or a preferred map on initial start up.**
- **Easy and instant switching of maps for the driver, without the need to stop and fiddle about with DIP switches, turn dials, or even the need to plug in and re-map using an OBD handset, which can be very slow and not without risk.**
- **A reduced risk of future DPF problems, as is commonly associated with most diesel tuning boxes due to their inability to control fuelling in proportion with demand.**
- **Our fleet operators told us that they would like a map designed to encourage their drivers to stay within the optimum torque band to discourage them from driving in low gears at high engine speeds, wasting fuel unnecessarily. Many have tried driver training, at great expense, but the training is quickly forgotten or ignored. It was also suggested that it should be possible to switch the maps remotely via a tracking system.**
- **A system that is universal, with the ability to be easily removed or transferred to another vehicle when required.**

Our mission was to design and build an electronic control unit that matched all of these requirements, to offer our own customers much, much more than was presently available and to give us, and our appointed dealers, a unique and competitively priced product, with the opportunity to retain good profits. In fact we have even exceeded our own expectations!

The CRD Technology Select-A-Map ECU is a new generation, diesel control unit that is undoubtedly the most sophisticated and advanced tuning product available today. It packs in features and benefits never previously seen and although it does not cover some of the features of a re-map, such as the ability to modify ECU torque limits, it combines most of the advantages of a re-map with those of a tuning box, without any of the disadvantages. Plus a whole lot more features!

Our in-house electronics experts have worked very closely with our diesel tuning and diagnostic specialists here in the UK to produce the first and only alternative to a quality ECU re-map. Using patented technology, accurate mapping is easily achieved, with a choice of up to 5 instantly switchable maps, plus many desirable features.

The Select-A-Map ECU is suitable for the vast majority of common rail diesel engines fitted to cars, LCV's, Trucks, Mobile Homes, agricultural vehicles and other CRD vehicles. It can still be used, with even greater effect, to alter and further improve the performance of an already re-mapped ECU, where torque, boost and fuelling parameters have been widened.

The Select-A-Map ECU is easily removed and its use cannot be detected during dealer servicing or fault diagnosis. Consequently, installation does not risk invalidation of the vehicle manufacturer's warranty and it is unaffected by dealer warranty work, such as ECU reprogramming/updating.





## Installation and Set-up

### Installation

The Select-A-Map ECU is easily installed and requires only a vehicle ground and a fused permanent live supply. Connections are made to the 0-5v variable fuel rail pressure sensor (FRPS) signal wire - hard wired or by using vehicle specific male and female adapter leads - subject to availability. A universal inductive pick up sensor is then attached to the most accessible single injector switching wire (or alternatively by using a vehicle specific male-female adaptor lead with integral sensor - subject to availability). The robust and fully waterproof Select-A-Map ECU can then be mounted in any convenient position in the engine bay. The wiring harnesses supplied are OEM quality and the main harness is used in all applications with a second, optional harness being used mainly for Dual Fuel applications.

### How it works

The Select-A-Map ECU magnetically measures any one injector's opening time and frequency, including any number of pilot pulses that may be present. At the same time, the constantly varying voltages from the fuel rail pressure sensor (FRPS) and resultant fuel pressure changes are measured.

This data is used to create a 3 dimensional numerical map that can be edited by the Engine Tuner to either increase or decrease the amount of diesel injected. Although any fuelling changes made by the Select-A-Map ECU are made solely by altering fuel rail pressure, this is not

dissimilar to the vehicle ECU's normal operation. Changes in injector opening times are generally only required briefly during the initial response to abrupt changes in fuel demand to compensate for small delays in fuel pressure rise and fall. For the rest of the time, injector opening times are almost constant. The Select-A-Map ECU captures the engines entire fuelling map and creates a mirror image of the map which can then be altered by the tuner.

### Calibration

Calibration is carried out from the driver's seat using the dealer handset. During initial auto-calibration, the unit identifies whether the vehicle utilises piezo injectors or inductive injectors and adjusts itself accordingly. Injector opening times, engine speed and fuel rail pressure are captured at idle. Next, during a short drive cycle maximum readings are captured for injector opening times, rpm, fuel rail pressure and engine load. The engine's peak acceleration rate is also measured, which is vital input information for the Select-A-Map's unique acceleration Control feature. The Select-A-Map then automatically sets safe limits for absolute and differential fuel rail pressure parameters. In addition, 3 engine load and 5 engine speed map bands are calculated and set, forming 15 interpolated map windows. The fuel rail pressure and map band parameters can be easily edited by the installer. Auto calibration set up is now complete.

## Rolling Road plot showing diesel mapping capability



**High Torque & Higher BHP**  
**High Torque & Lower BHP**  
**Standard Torque and BHP**

The SELECT-A-MAP ECU offers the driver a choice of maps that can be switched in an instant, allowing power to be increased only when needed, therefore reducing fuel consumption and further reducing any risk of DPF problems.





## Boost Control

A well executed turbo diesel engine remap usually benefits from better all round driveability than a diesel tuning box, but it doesn't necessarily produce more power. It is generally assumed that remaps raise turbo boost pressure as well as fuel quantity and boost parameters.

However, as the air intake supply is not regulated there is always an oversupply of air into the combustion chamber, so simply increasing the amount of fuel delivered will result in more power, although only up to a certain point as oxygen is used up resulting in diminishing power gains.

CRD Technology have compared dyno results from many vehicles installed with diesel tuning boxes to those having been re-mapped by brand leading chip tuning companies and concluded that most companies do not increase boost pressure at all. Therefore, there is usually little difference between ECU remaps and diesel tuning boxes when comparing published power gains.

One of the main problems associated with long-term boost pressure increase, and probably the main reason it is usually avoided, is the increased heat and wear it imposes on the turbo charger, which can ultimately lead to premature failure. If the boost pressure could be increased selectively and only when necessary - something which becomes possible using the Select-a-Map ECU technology - turbo charger wear could be reduced to an absolute minimum. With this in mind, several specialist engine tuners have asked CRD Technology for a boost control feature, which is now at an advanced stage of development and will soon be available as a plug-in accessory module for the Select-A-Map ECU.



The boost control module will allow the installer to increase or decrease boost by any amount (within the car's ECU limits) for each of the 5 maps.

## Diesel Particulate Filter (DPF) Removal

DPF removal is a rapidly growing business as increasing numbers of filters are failing due to blockages that results in loss of power, poor driveability and MPG or, in extreme cases, limp mode activation. Of course, it is essential that any management system faults are accurately diagnosed and rectified before any attempt is made to remove a filter and/or reprogram of the vehicle ECU.

Although there are a number of products available that offer deletion through software, cover is limited to specific vehicles and ECUs. Add-on boxes that are designed to emulate the DPF pressure sensor offer another solution but these are often over-complicated, difficult to install and take reference from many sensors.

The Select-a-Map ECU measures engine speed, load and fuel quantity injected, it therefore already has all the data that would be required for perfect DPF pressure sensor emulation. With this in mind, CRD Technology have begun development of an additional plug-in module that will enable such emulation.

The module will provide a means to interrupt the DPF sensor's 0-5v signal to allow it to be monitored and modified using the dealer handset. This will allow removal of the DPF, while appeasing the vehicle's engine management system, by providing it with a realistic emulated sensor signal.

As a diagnostic aid this feature could also be used to increase DPF pressure sensor voltages, forcing regeneration of the DPF sooner than it would normally, allowing DPF cleaning to be carried out during vehicle servicing and repairs.

If the DPF has become too blocked to perform active or forced regeneration procedures, the module will allow the Select-A-Map ECU to initiate the regeneration process, emulating the correct sensor conditions.

A comprehensive technical explanation of DPF issues and the use of the Select-A-Map ECU in resolving them is available on our website: [www.crdtechnology.com](http://www.crdtechnology.com)

For a quick overview of the installation and setup procedures, please see the Quick Start Guide on pages 5-8.



# Quick Start Guide: Installation



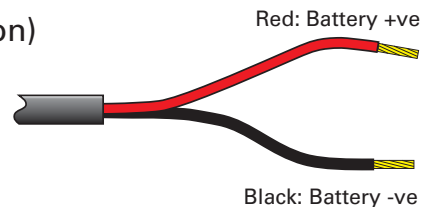
## Please Note

This Quick Start Guide is provided as a reference aid to illustrate the minimum steps required for successful installation and calibration on most vehicles and to act as a series of memory prompts for the trained installer. It should not be considered a replacement for the installation manual or proper training. To ensure optimal performance and safe, reliable operation, the installer should have a good knowledge of all the features and functions.

# 1

## Power Supply (Simple, 2 wire connection)

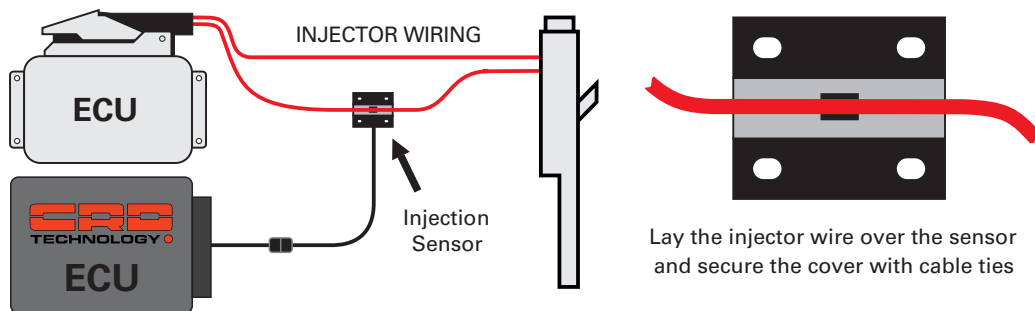
The unit requires a single 12 volt power connection. Ignition on/off states are determined automatically so a permanent (battery +ve) supply may be used for convenience. For more power configuration options, please refer to the technical manual.



# 2

## Injection Sensor (Patented clamp-over design - no wires to cut!)

The injection sensor (supplied) should be securely clamped over **any** one of the two injector wires (of any injector). Please ensure that the wire is positioned centrally and directly over the sensor chip. A unique, patented signal processing system automatically determines the injector signal type and polarity, regardless of sensor position or orientation.

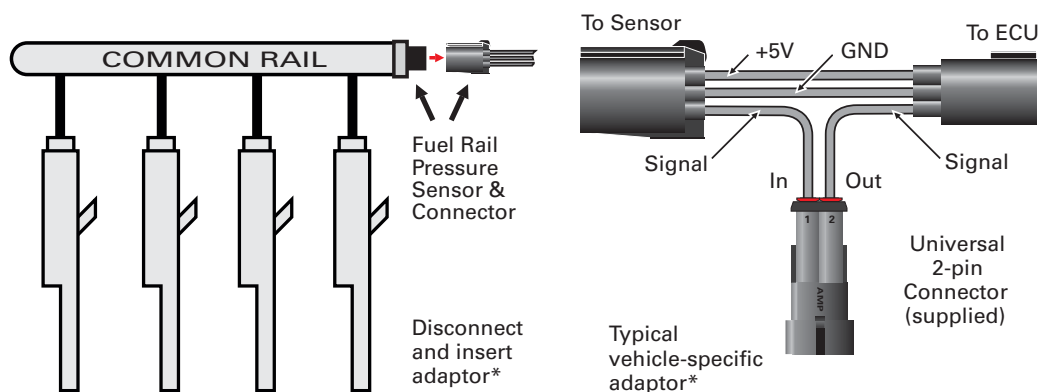


# 3

## Fuel Rail Pressure ('Plug and play' connection\*)

The fuel rail pressure sensor signal must be intercepted to enable manipulation of fuel rail pressure. A vehicle-specific adaptor\* can be used to avoid the need to cut wires and to allow for quick removal and refitting. The adaptor should be used in conjunction with the universal 2-pin connector (supplied).

*\* Where available (optional item).*





# Quick Start Guide: Calibration

If no previous calibration has been performed, a full calibration will be required, which will automatically commence when the unit is powered for the first time. If calibration does not start during power-up, such as when the unit already contains calibration data from a different vehicle, a full factory reset should be performed.

(Main Menu -> System -> Factory Reset).

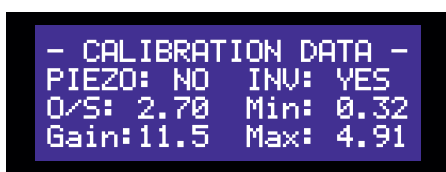


# 1

## Sensor Calibration

(Automatic Process - Takes 25 seconds)

This is a fully automatic stage, requiring no operator intervention. The process takes around 20 seconds while the injector sensor signal type is identified, amplified and optimised. Once complete, the sensor calibration data is displayed for reference.



### Typical Sensor Calibration Data Screen

This information is displayed briefly (approximately 5 seconds) before the calibration process continues. If a 'NO SIGNAL' error is displayed or calibration continually restarts, check the sensor positioning.

# 2

## Idle Calibration (Automatic Process - Takes 15 seconds)

This is a fully automatic stage, requiring no operator intervention. The engine must remain at a steady idle speed for the duration of the sampling period, which takes approximately 10 seconds to complete.



### Idle Sampling

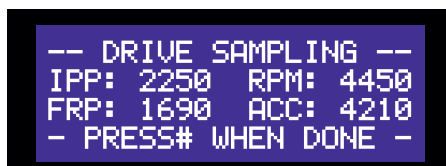
The progress bar indicates the time remaining, while idle data such as injector pulse width, fuel rail pressure and engine speed are sampled. When complete a summary of the data captured is briefly displayed (approximately 5 seconds).

# 3

## Drive Calibration (Semi-Automatic Process - Takes 1-2 minutes)

This is a semi-automatic stage that captures the upper limits of the engine and its management system. It is important to ensure that maximum values are reached to allow the system to properly determine the control parameters.

To capture maximum engine acceleration (ACC) and speed (RPM) it is recommended that the engine is quickly revved to the red-line two or more times while stationary. The vehicle should then be driven to capture the maximum injector opening period (IPP) and fuel rail pressure (FRP) - these are largest during moments of sudden, short bursts of acceleration or under heavy load. Vehicles with automatic transmission should be driven in low gear to achieve maximum rpm.



### Drive Sampling

The data values displayed are the maximum values recorded (not the live data). Continue with the drive calibration procedure until no further increases are observed. When the maximum values have been captured, press the # key to continue.

**Calibration Complete** - Approximate time: 2-3 mins

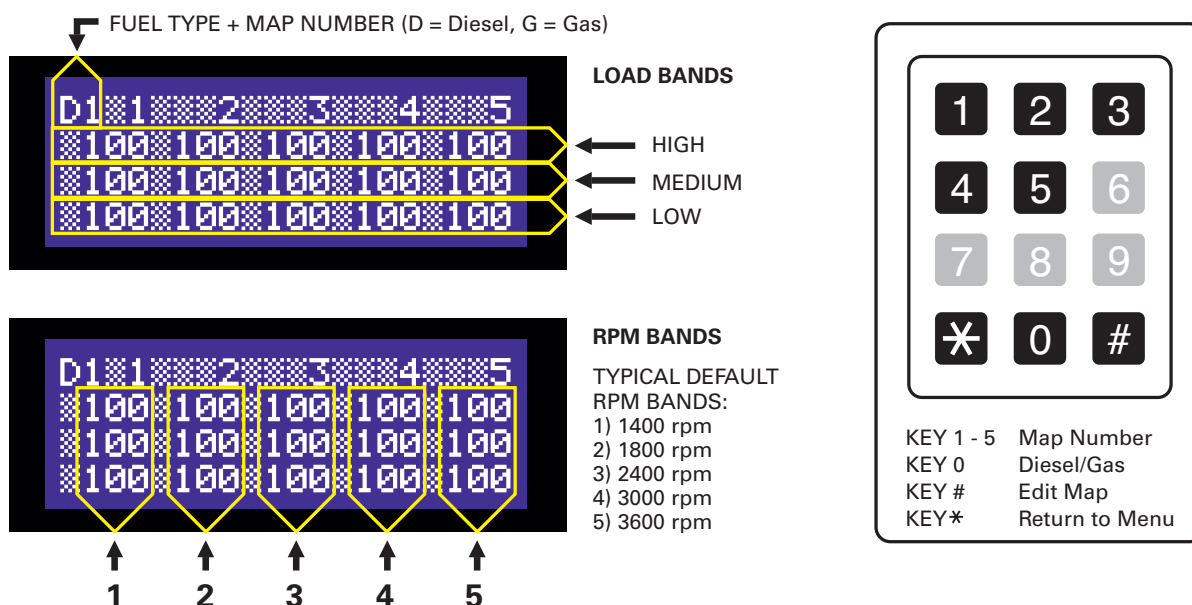
# Quick Start Guide: Fuel Maps

## From the Main Menu:

Select Fuel Maps [1] then choose Diesel [1] or Gas [2], change the map number [2] (if required) then select View/Edit Map [1].

## Screen Layout

The fuel map view/edit screen is divided into fifteen fuel map cells, comprising of three load bands and five rpm bands. Values in the left-most column control fuelling when the engine speed is near that of the lowest rpm band, while values in the bottom row control fuelling when the engine load is near that of the lowest load band. The top row contains the fuel type and number of the selected map (top left) and the column numbers of the rpm bands. A value of 100 (100%) = standard (i.e. no fuel increase or decrease). Intermediate values are automatically interpolated to provide a smooth transition between bands.



## Creating Maps

To begin editing a fuel map, press the # key, then use the keys shown on the right to select and edit cells. Below is a recommended set of diesel maps that should work well with most vehicles.

**Note:** To enter values less than 100, precede digits with zeros.

E.g 80 = 080, 6 = 006, 0 = 000

### Map 1: Standard (unmodified)

100	100	100	100	100
100	100	100	100	100
100	100	100	100	100

STANDARD TORQUE, STANDARD BHP

### Map 2: Economy

115	120	120	100	100
110	115	115	100	100
100	110	110	100	100

INCREASED TORQUE, STANDARD BHP

### Map 3: Fast Road Use

115	120	120	120	120
110	115	115	115	115
100	110	110	110	110

INCREASED TORQUE, INCREASED BHP

### Map 4: Occasional Fast Road Use

150	150	150	150	150
150	150	150	150	150
100	150	150	150	150

HIGH TORQUE, HIGH BHP

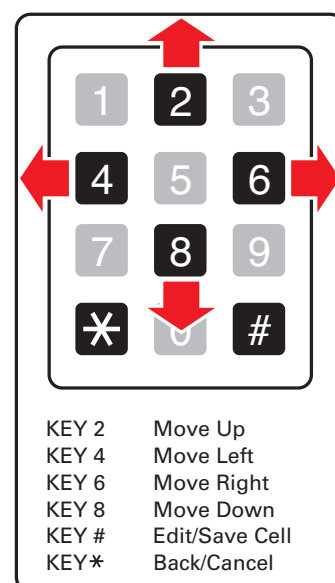
### Map 5: Low Power / Valet Mode

65	65	65	65	65
65	65	65	65	65
100	65	65	65	65

REDUCED TORQUE, REDUCED BHP

### Map 5 Note:

Once selected, Map 5 will remain selected, regardless of any default map setting. This is ideal for use as a power restriction map to improve security and prevent engine abuse.



# Quick Start Guide: Features and Settings

The following are just a few of the features and settings that may be used to further optimise fuel control to obtain the best possible economy or performance. For a full explanation of all the features and settings, please consult the technical manual.

## Fuel Map Bands

Main Menu -> Fuel Maps [1] -> Diesel/Gas Maps [1/2] -> Fuel Map Bands [3]

Load bands and rpm bands are automatically set during calibration but may be adjusted separately for each map to enable finer control at a particular engine speed or load. The rpm band '0' sets the fuel control 'start' rpm - No fuel adjustments will be made below this engine speed.

## Absolute and Differential Fuel Pressure Limits

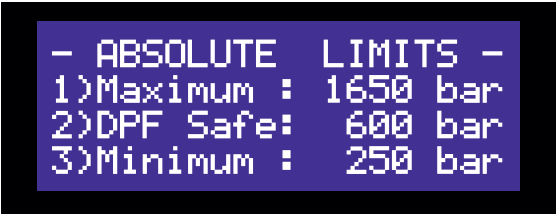
Main Menu -> Setup [4] -> FRP Control [1]

The fuel pressure limits provide safety margins that take priority over all fuel adjustments. They guard against exceeding engine management parameters that could otherwise lead to fault detection issues. The limits are set automatically during calibration to values that are compatible with most engine management systems. On systems that are more tolerant of fuel modifications, the limits can easily be modified to allow for an even greater range of fuel adjustment.

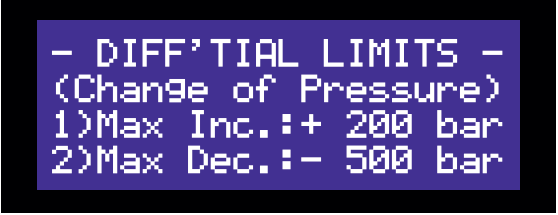
**Absolute Limits** set the maximum and minimum pressure.

**DPF Safe** sets the minimum pressure at which any increase in pressure can take place. This helps to prevent over-fuelling and DPF blocking.

**Differential Limits** are relative values that set the maximum change (increase/+ or decrease/-) in pressure.



```
- ABSOLUTE LIMITS -  
1)Maximum : 1650 bar  
2)DPF Safe: 600 bar  
3)Minimum : 250 bar
```



```
- DIFF'TIAL LIMITS -  
(Change of Pressure)  
1)Max Inc.:+ 200 bar  
2)Max Dec.: - 500 bar
```

## Acceleration Control - Main Menu -> Setup [4] -> Acceleration Ctrl [2]


Acceleration Control is a unique feature that can be used on its own (with a standard/100% map) or in combination with a fuel modification map. It provides a simple method of controlling performance based on engine acceleration rate, allowing acceleration to be limited without reducing torque at constant speeds.



```
-ACCELERATION CTRL-  
XXXXXXXXXXXXXXXXXXXX  
XXXXXXXXXXXXXXXXXXXX  
MIN [DM1: 40%] MAX
```

## Remote Control - Main Menu -> Setup [4] -> Next [#] -> Remote Control [2]

If the optional remote control receiver is installed, a key fob may be 'paired' with the unit to allow remote map selection. New key fobs can easily be added (up to a maximum of 10) by following the prompts in the remote control menu section. For safety reasons, key fob map selection is disabled at above-idle engine speeds.



```
-- REMOTE CONTROL --  
1) Pair a new RC  
2) Test a paired RC  
3) Unpair all RCs
```

## Fuel Map Default - Main Menu -> Setup [4] -> Next [#] -> Next [#] -> Fuel Map Defaults [1]

A specific map can be selected as the default map to revert to at power-up/ignition-on. For example, it may be preferable to always start the vehicle with a standard/100% map or, for added security, a reduced-power or 'valet mode' map. Note: One exception to this is Map 5 which, when selected, remains selected, regardless of any default map settings or ignition status, until a different map selection is made.



## Nitrous Oxide (NOS)

The Select-A-Map ECU also has an optional nitrous oxide control feature that can be used in conjunction with a dry nitrous system, not only for common rail diesel engines but also gasoline direct injection (GDI) applications.

Dry nitrous oxide systems deliver only nitrous into the engine's air intake (not additional fuel) and therefore rely on a surplus of fuel being present in the combustion chamber. This is combined with the nitrous to create extra horsepower.

Most modern diesel engines run with some available excess fuel, which can sometimes be evident as exhaust 'smoke' (unless fitted with a DPF), while modern GDI engines usually employ a full closed loop control system that precisely regulates the fuel mixture, leaving very little excess fuel for the nitrous to combine with during acceleration.

One solution to the problem of introducing more fuel when using nitrous on petrol engines is to use a 'wet' system. This involves modifying the engine's regulated fuel supply by installing an additional solenoid and jet to inject the extra petrol required into the engine intake as required. Difficulties in using this method arise when working with high pressure petrol GDI systems, but for compression ignition diesel engines, that require the fuel to be atomised and injected at very high pressures in order to achieve ignition, this method becomes impossible.

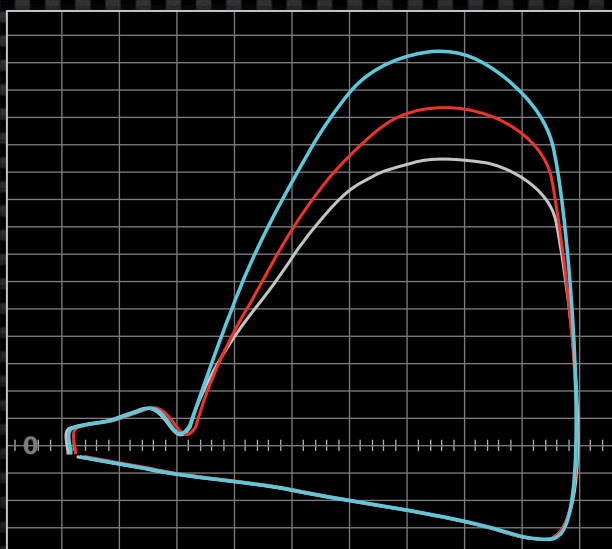
The Select-A-Map ECU enables the diesel or petrol quantity to be increased at all different engine speeds and loads whilst simultaneously injecting the nitrous. Using the optional Select-A-Map ECU solenoid driver interface, it becomes possible to 'map' the nitrous, giving precise control of the solenoid and supplying the correct quantity of nitrous with minimum waste.

The Select-A-Map ECU nitrous map outputs a switching frequency and duty cycle (variable pulse width) to the nitrous solenoid that is directly proportional as to how much diesel or petrol is being injected into the engine in real time. This frequency is directly controlled by the engine's 4-stroke cycle i.e. 6hz @ 720 rpm, (720 rpm divided by 60 secs = 6 firing strokes per second) or 30hz @ 3600 rpm (3600 rpm divided by 60 secs = 30 firing strokes per second).

The duty cycle range (nitrous solenoid on-duration) of between 20% and 100% is dependent on the map setting and can easily be altered by the installer as can the nitrous quantity by changing the size of jets. This level of control allows more frequent yet economical use of the nitrous by the user since an exact quantity of nitrous can be injected as and when it is needed, such as at full load, mid rpm conditions. When there is little or no nitrous required, such as at higher engine speeds and when there is less load, the injection of nitrous can be reduced or stopped.

Another useful unique feature of the Select-A-Map ECU is its ability to switch between any one of its 5 fuel maps even with the engine running and to automatically switch to an excess fuelling map specifically intended for nitrous use.

By connecting it's auxiliary sensing wire to the live side of the nitrous arming switch the Select-A-Map ECU selects map 4 (configured to inject more fuel) and then reverts back to map 5 (standard fuel) or its previously selected map when the system is disarmed.



Standard Diesel Power

High Diesel Power

High Diesel Power with Nitrous Oxide

## Hydrogen

There is an increasing global requirement for on-board produced Hydrogen to power motor vehicles. Storage of hydrogen is problematic and hazardous, so it is preferable to produce it on the vehicle on demand.

The same optional high-power solenoid and plug-in module that the Select-A-Map ECU uses to control Nitrous can also be used to accurately control on-board hydrogen production in accordance with engine demand.

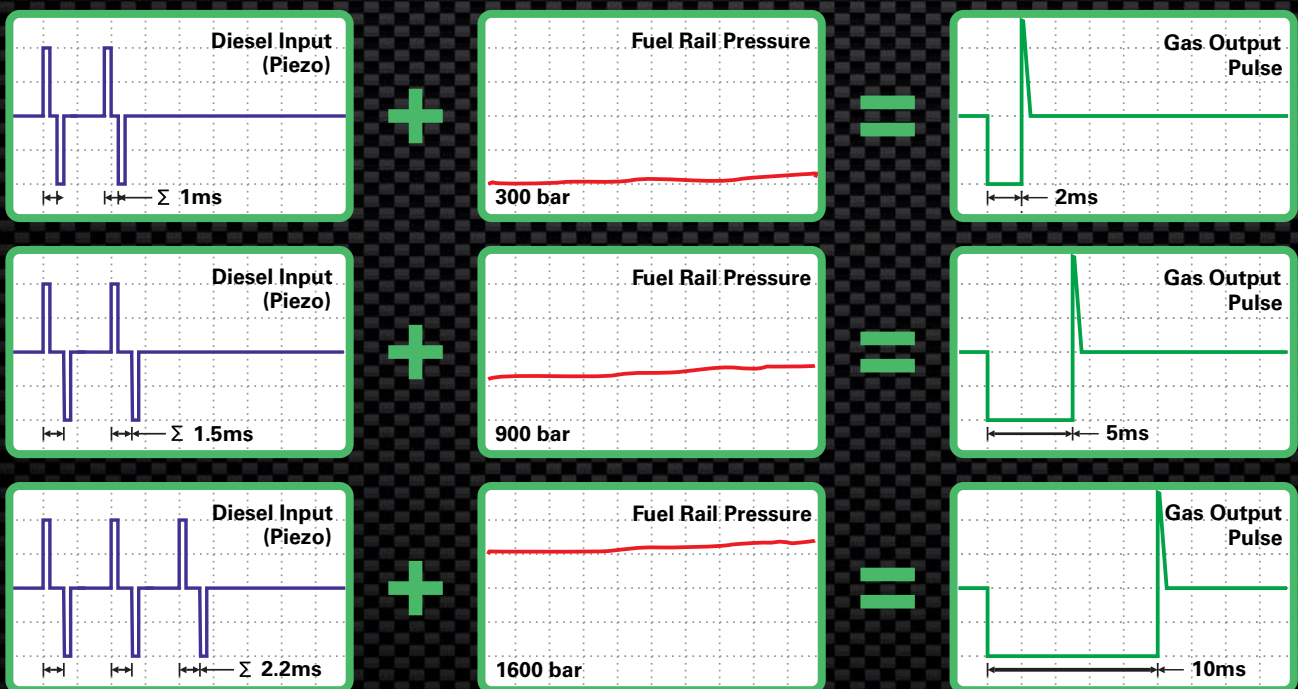
## Diesel-Blend - LPG/CNG

The Select-A-Map ECU was also developed to enable common rail diesel engines to run on a blend of at least 2 fuels, the most common being Liquid Propane Gas (LPG) or Compressed Natural Gas (CNG). It is compatible with most makes of CNG or LPG liquid and vapour systems that are designed to operate with multipoint petrol injection vehicles.

CNG allows for much higher substitution ratios than LPG because it has a higher octane rating and therefore a greater resistance to burn. LPG substitution ratios above 35-50% can lead to detonation, and are therefore generally avoided, while CNG substitution ratios of over 50% are common.

The Select-A-Map Diesel Blend ECU has many features and benefits not previously available including a choice of maps to suit the type of secondary fuel being used (LPG or CNG) and different operator requirements. Precise control of each fuel via two separate maps allows the perfect mixture to be achieved without any increase or decrease in overall engine power.

The engine management system of a common rail diesel engine has two main functions, to switch open the diesel injectors at the correct time and for the correct duration, also to control pressure in the common rail.



---- GAS OUTPUT ----

- 1) 3.0 ms Baseline
- 2) 360 Degrees ATDC

```

O2: 4.98V = 22.1 AFR
1) 3.30V = Gas On
2) 2.80V = Gas Off
3) Gas Ctrl Enabled
    
```

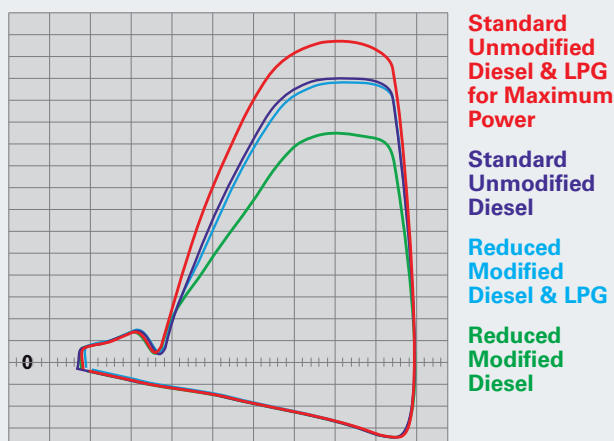
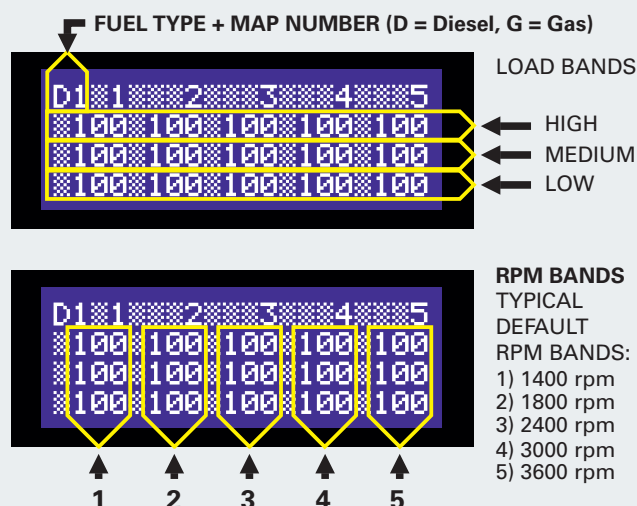
The Select-A-Map Diesel Blend ECU magnetically measures the injector opening times from one cylinder only; it also interrupts and measures the 0-5 volts varying pressure signal voltage from the fuel rail pressure sensor going to the ECU. It uses this information to quantify when, and how much diesel is being injected into all cylinders during the engines 720 degree 4-stroke cycle, regardless of the number of cylinders. The unit uses this data to calculate an assumed value which it then converts into sequential output signals, similar to those of a petrol injector. These 0-12v switching signals can now be used with any liquid or vapour LPG or CNG system. Selecting the number of cylinders using the dealer handset varies the outputs from between 180 degrees (4 cyl') to 90 degrees (8 cyl'). The Select-A-Map Diesel Blend ECU also generates an engine speed signal (RPM); this can be used by the gas system and is present even on overrun (but automatically stops should the engine stall or if rail pressure is lost).

Following installation the Select-A-Map Diesel Blend ECU is calibrated to the engine's diesel injector signal and fuel rail pressure sensor using a handset and programming lead. During calibration the Select-A-Map Diesel Blend ECU automatically detects if Piezo or inductive type injectors are employed and configures itself accordingly to achieve the best signal synchronisation. Minimum and maximum diesel injector opening times, fuel rail pressure, engine speed and acceleration rate data is recorded during the automatic calibration drive cycle. This stored information is used to create two maps; one for diesel control and one for LPG/CNG.



## Diesel Blend - LPG/CNG

The maps consist of three engine loads; high, medium and low and five evenly spaced engine speed selections. These fifteen sites can then be adjusted by the installer allowing more precise tuning adjustments at any desired engine speed and load (intermediate values are automatically interpolated). Using an optional emulator, the memory chip may be removed from the Select-A-Map Diesel Blend ECU where a 32 x 32 map can be more precisely adjusted using the 1024 available sites.



From the installer handset; all 15 site windows begin with a value of 100, indicating a gas millisecond value that is proportional to an amount of diesel being injected into the engine. These ms outputs are calculated by combining diesel injector opening times and fuel rail pressure while also compensating for diesel injector latency.

A baseline output of 3ms at low engine speed and load is set by default and can be altered in the setup section. By default, the gas injection output is set to occur 360 degrees after top dead centre (ATDC), to avoid gas being injected into the cylinders while the exhaust valves are open, which helps to improve efficiency and emissions. This value is also adjustable anywhere between 0 degrees and 720 degrees ATDC.

The installer must now use his/her knowledge to choose the correct gas injector size and reducer pressure, making sure to start with lower amounts of gas, increasing gradually as necessary. An approximate substitution rate of 35% is normal but higher amounts may be possible at medium engine speeds and loads during cruise. The gas quantity injected can be adjusted on the Select-A-Map Diesel Blend ECU by changing the baseline ms value or any of the 15 map window values. Further adjustments can be made using the LPG/CNG system's own software.



Installer Handset

Adding gas to the standard diesel map will result in more power without any emissions benefit. However, by selecting the diesel map and lowering any of the 15 window values (below 100%), the quantity of diesel injected can be reduced. The Select-A-Map Diesel Blend ECU can increase or decrease the amount of diesel injected by emulating the fuel rail pressure sensor signal. It is therefore possible to blend the 2 fuels such that the engine continues to produce standard power (BHP) and torque.

A wideband lambda sensor option enables accurate gas control, ensuring no smoke from the exhaust when accelerating and improved fuel economy. The Select-A-Map Diesel Blend ECU can also be configured to reduce diesel at all times or only when running on both fuels. In the latter configuration, the diesel map automatically returns to standard when the gas system is switched off.



## Diesel Blend Installer Opportunity

There will soon be an opportunity for specialist Diesel Blend installers who are already experienced in petrol LPG system installations and UKLPGA approved. They will also be able to demonstrate good knowledge of common rail diesel technology and diagnostic capability with appropriate equipment. The appointed installers will be expected to attend and pass a specific common rail diesel training course, prior to appointment.

This is a unique opportunity to be involved at the start of an exciting Diesel Blend growth programme. Although fuel cost savings on LPG/Diesel Blend are nominally circa 10-15% and currently a small market, the real growth opportunity in the UK is in CNG/Diesel Blend which is about to take off, with savings of circa 30% being achievable. The successful installers will be in at the start and grow with the business opportunity as CNG becomes more readily available as in the rest of Europe. eg 800 filling stations in Germany!

CNG, due to its greater octane rating, allows a greater replacement percentage and is a cheaper and cleaner burning fuel. The attraction is not only cost saving, but in the substantial reduction of emissions and carbon footprint. We will appoint a limited number of carefully selected Diesel Blend installers to give good coverage of the UK while ensuring they have a large enough territory to produce excellent sales and profit opportunities.



**Demonstration  
vehicle**

## Contact us

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Designed and Built in the UK  
Global Patents Pending

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## Dealer Opportunity Select-A-Map

We are currently setting up a network of approved specialist installers who are well respected in their area, have a quality and professional image with an established Website and good range of suitable diagnostic equipment, and of course the appropriate skills. A rolling road dynamometer would be an advantage but is not essential.

Only people who can tick most of the following requirements would be considered as one of the first people to win this fantastic opportunity to increase their business, with this exciting new and unique product.

- ✓ Probably an established Superchips, Revo or similar remap product dealer.
- ✓ Performance enthusiasts with a proven track record selling performance products.
- ✓ Common rail diesel engine diagnostic experience.
- ✓ DPF operation and problems awareness.
- ✓ Experience of writing and installing maps.
- ✓ Fleet contacts.

Consideration would be given to suitably experienced mobile operators with the appropriate equipment and skills.

Although the Select-A-Map ECU works on most common rail diesel engines, regardless of age, our initial prime target markets in the UK are vehicles still under manufacturer's warranty and probably up to 3 years old, plus fleet customer's cars, vans and LCV's up to 3.5tonnes. There are also opportunities for HGV's.

## Who we are

We are passionate motor enthusiasts with many years hands-on experience in the retail motor industry and our team packs in over 100 years of motor trade and advanced electronics experience with car and commercial vehicle manufacturers, specialist performance centres and franchised dealers.

Our advanced electronics lab is staffed by some of the leading designers in the specialised field of applied vehicle engine control electronics, who have worked closely with our vehicle fuel systems engineers to produce several different ECU applications, all based on the same Patent protected technology.

## Where we are

Our main office and R&D centre is based in Bolton at CRD Performance, Burnden Industrial Estate, Manchester Road, Bolton with our electronics lab located in a separate facility on the outskirts of Bolton.

**SELECT-A-MAP**  
Diesel Control ECU